Math 11 HW Sheets

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C11 - 1.1 - Arithmetic Sequence missing terms WS

Find missing terms of the sequence.

2,   4,   6,   _____,   _____,   _____

4,   _____,   -2,   _____,   _____,

8,   14,   20,   _____,   _____,   _____

-7,   _____,   3,   _____,   _____,

11,   6,   1,   _____,   _____,   _____,

7,   _____,   _____,   -32,   _____,

2,   -4,   -10,   _____,   _____,   _____

4,   _____,   _____,   25,   _____,

-8,   -5,   -2,   _____,   _____,   _____

$\frac{1}{2}$, $\frac{3}{2}$, $\frac{5}{2}$,   _____,   _____,   _____

13,   _____,   _____,   _____,   81

0.33, 0.34, 0.35,   _____,   _____,   _____

$\frac{1}{2}$, $\frac{1}{4}$,   0,   _____,   _____,   _____

Solve for x, and missing terms

$x, x + 1, x + 2,$ _____,   _____,   _____

$x + 1,\ \ 3x - 1,\ \ 2x + 3,$ _____, _____,

3,5,7, x=2

_____,   _____,   _____,   8,   10,   12

5,   _____,   _____,   20,   25,

$2x + 2,$ _____, $7x - 5,$ $5x + 5,$

2,   _____,   _____,   8,   10,

8,12,16,20 x=3

2,   _____,   _____,   -4,   -6,

$x^2 - 12,\ \ x^2 - 2x + 2,\ \ 2x^2 - 3x - 4,$ _____,

5,   _____,   17,   _____,   _____,

13,17,31 $x = -5$

4,10,16 $x = 4$

2,   _____,   -8,   _____,   _____,

C11 - 1.1 - Arithmetic first term, difference HW

Circle the first term, write $t_1 = \quad$, *and* find the common difference, twice.

$\textcircled{1}, 3, 5, 7, \dots$

$t_1 = 1$

$d = 3 - 1 = \textcircled{2}$
$d = 5 - 3 = \textcircled{2}$

$3, 7, 11, 15, \dots$

$t_1 =$

$d =$
$d =$

$8, 14, 20, 26, 32$

$10, 8, 6, \dots$

$3, -1, -5, \dots$

$5, 2.5, 0, \dots$

$12, 17, 22, 27, 32$

$-10, -12, -14, -16, -18$

$14, 19, 24, 29, 34$

$-\dfrac{1}{2}, -\dfrac{3}{2}, -\dfrac{5}{2}, \dots$

$\dfrac{9}{2}, \dfrac{7}{2}, \dfrac{5}{2}, \dots$

$27, 13, -1, \dots$

$2, 3, 4, 5, 6$

$-3, -5, -7, -9, -11$

$5, 11, 17, 23, 29$

$9, 12, 15, 18, 21$

$16, 21, 26, 31, 36$

$0.3, 0.31, 0.32, 0.33, \dots$

C11 - 1.1 - Arithmetic Means HW

Write the first 5 terms of the sequence

$t_1 = 2, d = 3$

$t_1 = 4, d = -3$

$t_1 = -4, d = 5$

$t_1 = -7, t_3 = 3$

$t_1 = 5, t_3 = 15$

$t_1 = 2, t_4 = -4$

$t_1 = 7, t_4 = -32$

$t_1 = 13, t_5 = 81$

$t_1 = 2x - 8, t_3 = 3x - 2$

$6, 13, 19, x = 7$

C11 - 1.1 - Arithmetic Means HW

Find t_1 and d

$t_2 = 2, t_3 = 4$

$t_2 = 15, t_3 = 20$

$t_2 = 2, t_4 = -8$

$t_2 = 8, t_4 = -32$

$t_2 = 2, t_5 = -13$

$t_2 = 3, t_6 = 23$

$t_3 = 3, t_{12} = -1527$

$t_3 = 4, t_{10} = 39$

C11 - 1.1 - Arithmetic Sequences WS

$$\underset{\underset{n=1}{t_1}}{3} \overset{+}{,} \underset{\underset{n=2}{t_2}}{5} \overset{+}{,} \underset{\underset{n=3}{t_3}}{7} , \underset{t_4}{\underset{?}{\quad}} , \underset{t_5}{\underset{?}{\quad}} \ldots \underset{\underset{n=n}{t_n}}{\underset{?}{\quad}}$$

$t_1 =$

$d = t_n - t_{n-1}$
$\boxed{d = t_n - t_{n-1}}$

$d =$
$d =$
_____

Arithmetic: d must always be the _____

1. *Find the General term* $t_n =$?

$$\boxed{t_n = t_1 + (n-1)d}$$

The first term plus 'n − 1' *differences*

What is the tenth term t_{10}?

Or, Start from beginning

$t_n =$

General term formula

Remember: You could have also added the common difference 7 times to Term 3 ($t_{3)}$

Check your answer: 3,5,7,

31 is what term, $t_n = 31, n =$?

$t_n =$

Check your answer: 3,5,7,

C11 - 1.1 - Arithmetic General Term, nth terms HW

Find the General term.   **Find the 18th term. $t_{18} =$?**   **Find out what term 63 is. $t_n = 63$.**

3,   7,   11,   15, ...

$t_1 =$ $d =$

$d =$

$t_n = t_1 + (n-1)d$

Find the General term.   **Find the 12th term. $t_{12} =$?**   **Find out what term 49 is. $t_n = 49$.**

4,   9,   14,   ...

Find the General term.   **Find the 20th term. $t_{20} =$?**   **Find out what term 64 is. $t_n = 64$.**

7,   10,   13,   ...

C11 - 1.2 - Arithmetic Series Sum terms WS

Find the sum of the first sixth terms of the sequence.

2, + 4, + 6, + _____, + _____, + _____   =

3, + 7, + 11, + _____, + _____, + _____   =

8,   14,   20,   _____,   _____,   _____   =

7,   10,   13,   _____,   _____,   _____

11,   14,   17,   _____,   _____,   _____

6,   8,   10,   _____,   _____,   _____

2,   6,   10,   _____,   _____,   _____

3,   10,   17,   _____,   _____,   _____

8,   13,   18,   _____,   _____,   _____

7,   14,   21,   _____,   _____,   _____

11,   17,   23,   _____,   _____,   _____

8,   7,   6,   _____,   _____,   _____

7,   2,   -3,   _____,   _____,   _____

11,   8,   5,   _____,   _____,   _____

6,   5,   4,   _____,   _____,   _____

C11 - 1.2 - Arithmetic Series WS

$$\underset{\underset{n = 1}{t_1}}{3}, \quad \underset{\underset{n = 2}{t_2}}{5}, \quad \underset{\underset{n = 3}{t_3}}{7}, \quad \underset{t_4}{\overset{?}{\rule{1cm}{0.4pt}}}, \quad \underset{t_5}{\overset{?}{\rule{1cm}{0.4pt}}} \quad \cdots \cdots \quad \underset{\underset{n = n}{t_n}}{\overset{?}{\rule{1cm}{0.4pt}}}$$

$t_1 =$

$d = t_n - t_{n-1} \qquad d = t_n - t_{n-1} \qquad \boxed{d = t_n - t_{n-1}}$

$d = \qquad\qquad\qquad d =$

4. *What is the sum of the first twelve terms s_{12}? $s_{12} =?, n = 12$.*

$s_n = \dfrac{n}{2}(t_1 + t_n)$

$t_n =$

$\boxed{s_n = \dfrac{n}{2}(t_1 + t_n)}$

Sum of "n"
terms formula:
if t_n is known.

Check your answer: $3 + 5 + 7 +$

OR

$s_n = \dfrac{n}{2}(2t_1 + (n-1)d)$

$\boxed{s_n = \dfrac{n}{2}(2t_1 + (n-1)d)}$

Sum of "n" terms
formula: if
t_n is not known.

C11 - 1.2 - Arithmetic Series Sum nth terms HW

Find the sum of the first 12 terms. $S_{12} = ?, n = 12$

3,   7,   11,   15, ... $8, 14, 20, 26, 32$ $6, 13, 20, 27, 34$

Find the sum of the first 18 terms

$10, 8, 6, \dots$ $3, -1, -5, ..$ $5, 2.5, 0, \dots$

Find the sum of the first 100 terms.

7,   10,   13,   ... $5, 11, 17, 23, 29$ $14, 38, 62, 86, \dots$

Find the sum of the first 251 terms.

$\dfrac{1}{2}, \dfrac{3}{2}, \dfrac{5}{2}, \dots$ $\dfrac{9}{2}, \dfrac{7}{2}, \dfrac{5}{2}, \dots$ $27, 13, -1, \dots$

C11 - 1.2 - Find 'n' Arithmetic Series HW

Find "n" the number of terms

$15, 16, 17, 18, 19 \ldots \ldots \ldots 100 \quad \longrightarrow \quad t_n$

$t_n = t_1 + (n-1)d$

$4, 8, 12, 16, 20 \ldots \ldots .. 444$

$13, 15, 17, 19, \ldots \ldots \ldots .273$

$3, 5, 7, 9, 11 \ldots \ldots \ldots .. 139$

$9, 12, 15, 18, 21 \ldots \ldots \ldots .3342$

2, -2, -6, ...-410

8, -6, -20,...........-160

-25, -42, -59,...........-569

C11 - 1.2 - Finding Sum, t_1, d, Arithmetic Series HW

Find n and the sum.

$12 + 18 + 24 + \ ... + 72$

$8 + (-2) + (-12) + \ ... + (-102)$

$t_n = t_1 + (n-1)d$ $\qquad s_n = \dfrac{n}{2}(t_1 + t_n)$

$10, 12, 14, ... 88$

$14, 19, 24, 29, 34 ... ... 99$

$3, 5, 7, 9, ... 371$

$4, 8, 12, 16, ... 400$

$16, 21, 26, 31, ... 1001$

C11 - 1.3 - Geometric Sequence Means WS

Find the missing terms of the sequence.

2,   4,   8,   _____,   _____,   _____ | _____,   _____,   _____,   27,   81,   243,

1,   2,   4,   _____,   _____,   _____ | _____,   _____,   _____,   625,   3125

5,   20,   80,   _____,   _____,   _____ | _____,   _____,   _____,   -1, $\frac{1}{5}$, $-\frac{1}{25}$,

−4,   2,   −1,   _____,   _____,   _____ | 4,   _____ $\frac{1}{16}$,   _____,   _____,

9,   3,   1,   _____,   _____,   _____ |

10,   100,   1000,   _____,   _____,   _____ | 5,   _____   _____,   _____,

4,   6,   9,   _____,   _____,   _____ | 2,   _____   32,   _____,   _____,

-4,   -2,   -1,   _____,   _____,   _____ | 5,   _____,   _____,   40,   80,   160,

| 2,   _____,   _____,   16,   _____,   _____,

.5,   .25,   .125,   _____,   _____,   _____ |

| 1,   _____,   _____, $-\frac{1}{8}$, $\frac{1}{16}$, $-\frac{1}{32}$,

$\frac{2}{7}$, $\frac{12}{35}$, $\frac{72}{175}$,   _____,   _____,   _____ |

| $x+1$,   _____,   _____, $(x+1)^4$,   _____,

6,   -1, $\frac{1}{6}$,   _____,   _____,   _____ |

| 3,   _____,   _____,   _____,   243

$\frac{1}{3}$, $\frac{2}{9}$, $\frac{4}{27}$,   _____,   _____,   _____ |

| $Solve\ for\ x, and\ missing\ terms$

$\frac{1}{2}$, $\frac{3}{2}$, $\frac{9}{2}$,   _____,   _____,   _____ | $x-2$, $2x+2$, $8x+8$,   _____,

| 3,12,48 $x = 5$

x, x^2, x^3,   _____,   _____,   _____ |

C11 - 1.3 - Geometric Means HW

Write the first terms 5 of the sequence

$t_1 = 2, r = 3$ $t_1 = 4, r = -3$ $t_1 = -4, r = \dfrac{1}{2}$

$t_1 = 4, t_3 = 16$ $t_1 = 5, t_3 = 20$

$t_1 = 2, t_4 = -54$ $t_1 = 1, t_4 = \dfrac{1}{8}$

$t_1 = 3, t_5 = 243$ $t_1 = x - 1, t_3 = 4x - 4$

C11 - 1.3 - Geometric Means HW

Find t_1 and r

$t_2 = 2, t_3 = 4$

$t_2 = 10, t_3 = 20$

$t_2 = 2, t_4 = 96$

$t_2 = 8, t_4 = 32$

$t_2 = 2, t_5 = -16$

$t_2 = 2, t_6 = 32$

$t_3 = -3, t_{12} = -59049$

$t_3 = 4, t_{10} = 512$

C11 - 1.3 - Geometric Sequence $find$ t_1, r WS

Find the first term t_1, and the common ratio twice.

$2, 4, 8, ..$

$t_1 = 2$

$r = \dfrac{4}{2} = 2$

$r = \dfrac{8}{4} = 2$

$3, 9, 27, ...$

$t_1 =$

$r =$

$r =$

$5, 25, 125, ...$

$8, -4, 2, ...$

$-6, -36, -216$

$5, 10, 20, ...$

$2, \dfrac{1}{2}, \dfrac{1}{8}, ...$

$-27, -3, -\dfrac{1}{3}, ...$

$27, 3, \dfrac{1}{3},$

$1, -1, 1, ...$

$-10, 100, -1000, ...$

$0.3, 0.03, 0.003, ...$

C11 - 1.3 - Geometric General Term, nth term WS

Find the General Term

$2, 4, 8, \ldots$

$t_1 =$ $\qquad$ $r =$

$r =$

$t_n = t_1 r^{n-1}$

Find the 12th term. $t_{12} =?$

Find out what term 128 is. $t_n = 128$.

Find the General Term

$2, 6, 18, \ldots$

Find the 6th term. $t_6 =?$

Find out what term 162 is. $t_n = 162$.

Find the General Term

$8, -2, \dfrac{1}{2}, \ldots$

Find the 8th term. $t_8 =?$

Find out what term $\dfrac{1}{128}$ **is.** $t_n = -\dfrac{1}{128}$.

Find the General Term

$0.3, 0.03, 0.003, \ldots$

Find the 5th term. $t_5 =?$

Find out what term 0.00000003 is.

C11 - 1.3 - Geometric Sequences WS

$\times 3$ $\times 3$

$$\underset{\underset{n=1}{t_1}}{2}, \quad \underset{\underset{n=2}{t_2}}{6}, \quad \underset{\underset{n=3}{t_3}}{18}, \dots \quad \underset{t_6}{\underset{}{?}}, \dots \quad \underset{\underset{n=n}{t_n}}{?}$$

$t_1 = first\ term$
$r = common\ ratio$
$t_n = term\ n$
$n = number\ of\ terms$

$t_1 = 2$

$r = \dfrac{t_n}{t_{n-1}}$ $\qquad r = \dfrac{t_n}{t_{n-1}}$ $\qquad \boxed{r = \dfrac{t_n}{t_{n-1}}}$ $\qquad A\ term\ divided\ by\ the\ term\ before\ it$

$r =$ $\qquad\qquad r =$

Geometric: r must always be the same

$Find\ the\ General\ term\ t_n =?$

$t_n = t_1 r^{n-1}$ $\qquad\qquad \boxed{t_n = t_1 r^{n-1}}$ $\qquad$ General term formula

$What\ is\ the\ fifth\ term\ t_5?\ t_5 =?, n = 5.$

$t_n =$

$Check\ your\ answer: 2,6,18,$
Remember: You could have also multiplied the common ratio 2 times to t_3

3. $The\ number\ 1458\ is\ what\ term?\ t_n = 1458, n =?$

$t_n = t_1 r^{n-1}$

C11 - 1.3 - Geometric find 'n' WS

Find "n" the number of terms

$2, 4, 8, \ldots . . 256 \quad \longrightarrow \quad t_n$

$3, 9, 27, \ldots \ldots . . 729$

$4, 8, 16, \ldots \ldots .2048$

$t_n = t_1 r^{n-1}$

$8, -4, 2, \ldots \ldots . . \dfrac{1}{256}$

$-6, -36, -216 \ldots \ldots \ldots -46656$

$5, 10, 20, \ldots \ldots \ldots 160$

$2, \dfrac{1}{2}, \dfrac{1}{8}, \ldots \ldots \ldots \dfrac{1}{512}$

$9, -3, 1, \ldots \ldots \dfrac{1}{81}$

$27, 3, \dfrac{1}{3}, \ldots \ldots . . \dfrac{1}{2187}$

$1, 2, 4, \ldots \ldots .65536$

$10, 100, 1000, \ldots \ldots .1000000$

$0.3, 0.03, 0.003, \ldots 0.00000000003$

C11 - 1.4 - Geometric Sequence sum terms WS

Find the fourth, fifth and sixth terms of the sequence.

2, + 4, 8, + _____, + _____, + _____ =

3, + 9, + 27, + _____, + _____, + _____ =

1, + 2, + 4, + _____, + _____, + _____ =

5, + 20, + 80, + _____, + _____, + _____ =

4, + 6, + 9, + _____, + _____, + _____ =

4, + 2, + 1, + _____, + _____, + _____ =

9, + 3, + 1, + _____, + _____, + _____ =

10, + 100, + 1000, + _____, + _____, + _____ =

4, + 10, + 25, + _____, + _____, + _____ =

7, + 14, + 28, + _____, + _____, + _____ =

2, + 12, + 72, + _____, + _____, + _____ =

6, + 1, + $\frac{1}{6}$, + _____, + _____, + _____ =

$\frac{1}{3}$, + $\frac{1}{9}$, + 1/27, + _____, + _____, + _____ =

2, + −4, + 8, + _____, + _____, + _____ =

$\frac{1}{2}$, + $\frac{3}{2}$, + $\frac{9}{2}$, + _____, + _____, + _____ =

x, + x^2, + x^3, + _____, + _____, + _____ =

C11 - 1.4 - Geometric Series WS

$\times 3 \quad \times 3$

$$\underbrace{2}_{\substack{t_1 \\ n=1}}, \quad \underbrace{6}_{\substack{t_2 \\ n=2}}, \quad \underbrace{18}_{\substack{t_3 \\ n=3}}, \dots \quad \underbrace{?}_{t_6}, \dots \quad \underbrace{?}_{\substack{t_n \\ n=n}}$$

$t_1 = first\ term$
$r = common\ ratio$
$t_n = term\ n$
$n = number\ of\ terms$

$t_1 = 2$

$r = \dfrac{t_n}{t_{n-1}}$ $\qquad r = \dfrac{t_n}{t_{n-1}}$ $\qquad \boxed{r = \dfrac{t_n}{t_{n-1}}}$ $\qquad A\ term\ divided\ by\ the\ term\ before\ it$

$r =$ $\qquad\qquad r =$

Geometric: r must always be the same

What is the sum of the first six terms s_6? $s_6 = ?, n = 6$.

$s_n = \dfrac{t_1(1-r^n)}{1-r}$ $\qquad \boxed{s_n = \dfrac{t_1(1-r^n)}{1-r}}$ $\qquad$ Sum of "n" terms formula
(if number of terms is
known)

Check your answer: $2 + 6 + 18 +$

OR

$s_n = \dfrac{t_1 - rt_n}{1-r}$ $\qquad\qquad t_n =$ $\qquad \boxed{s_n = \dfrac{t_1 - rt_n}{1-r}}$ $\qquad$ Sum of "n" terms formula
(if last term t_n is known)

What is the sum of an infinite number of terms?

$r =$ $\qquad r > 1, \therefore$

C11 - 1.4 - Geometric Sequence $find\ t_1, r$ WS

Find the sum of the first 6 terms. $s_6 = ?, n = 6$

$2, 4, 8, ..$

$$s_n = \frac{t_1(1 - r^n)}{1 - r}$$

$3, 9, 27, ...$

$5, 25, 125, ...$

Find the sum of the first 9 terms

$8, -4, 2, ...$

$-6, -18, -54$

$5, 10, 20, ...$

Find the sum of the first 11 terms.

$2, \dfrac{1}{2}, \dfrac{1}{4}, ...$

$9, -3, -\dfrac{1}{3}, ...$

$27, 3, \dfrac{1}{3},$

Find the sum of the first 5 terms.

$1, 2, 4, ...$

$10, 100, 1000, ...$

$0.3, 0.33, 0.333, ...$

C11 - 1.4 - Geometric find 'n' WS

Find n, and the sum

$2, 4, 8, \dots .. 256 \longrightarrow t_n$

$t_n = t_1 r^{n-1}$ $s_n = \dfrac{t_1 - rt_n}{1-r}$

$3, 9, 27, \dots \dots .. 729$

$5, 25, 125, \dots \dots .3125$

$8, -4, 2, \dots \dots .. \dfrac{1}{256}$

$-6, -36, -216 \dots \dots \dots - 46656$

$5, 10, 20, \dots \dots \dots 160$

$2, \dfrac{1}{2}, \dfrac{1}{8}, \dots \dots \dots \dfrac{1}{512}$

$9, -3, 1, \dots \dots \dfrac{1}{81}$

$27, 3, \dfrac{1}{3}, \dots \dots \dots \dfrac{1}{2187}$

$1, 2, 4, \dots \dots .65536$

$10, 100, 1000, \dots \dots .1000000$

$0.3, 0.03, 0.003, \dots 0.00000000003$

C11 - 1.5 - Infinite Geometric Sequences HW

What is the sum of the infinite sequence?

___4___, ___2___, ___1___, ...

___2___, ___4___, ___8___, ...

___1___, ___$\frac{1}{2}$___, ___$\frac{1}{4}$___, ...

___-1___, ___$-\frac{1}{2}$___, ___$-\frac{1}{4}$___, ...

___2___, ___6___, ___18___, ...

$t_1 = 2, r = 2$

$t_1 = 8, r = \frac{1}{2}$

C11 - 1.6 - Sigma Notation WS

Take the sum of the terms a_k from the index to n, going up by 1 each time.

Arithmetic

$$\sum_{k=1}^{5} 3k =$$

$$\sum_{k=2}^{5} 2k - 1 =$$

$$\sum_{k=2}^{5} -2k - 1 =$$

Geometric

$$\sum_{k=2}^{6} 3(2)^{k-1} =$$

$$\sum_{k=1}^{4} 2(3)^{k-1} =$$

$$\sum_{k=1}^{\infty} 3\left(\frac{1}{2}\right)^{k-1} =$$

C11 - 1.7 - Arithmetic Sequence Series Word Problems

If you make $36, 000 in your first year at work and get a raise of $3000 per year. How much will you make in your 10th, 20th, 50th year at work?

How much will you make total after 10 years, 20 years and 50 years?

C11 - 1.8 - Geometric Sequence Series Word Problems

A ball rolls off a building 100 m tall. Each time the ball bounces on the floor, it rises to 80% of the previous height.

How high does the ball bounce after the first bounce? The third bounce?

How high does the ball bounce after the nth bounce? (Find the general formula)

How high does the ball bounce after the 9th bounce. $(t_{10} = ?)$

What is the total vertical distance the ball has travelled when it hits the ground for the 5th bounce? $(s_5 = ? \times 2 - 100)$

If it bounces forever, what is the total distance?

C11 - 1.8 - Geometric Sequence Series Word Problems

If you make $1 in your first year at work and get paid double each year after. How much will you make in your 10th, 12th, 20th year at work?

How much will you make total after 10 years, 12 years and 20 years?

C11 - 2.1 - $Sketch, Find\ \theta_r, \theta_{stp}\ HW$

Sketch θ_{stp}.
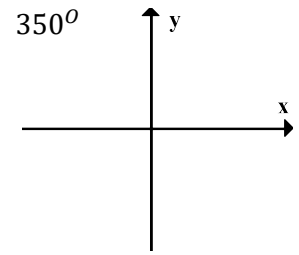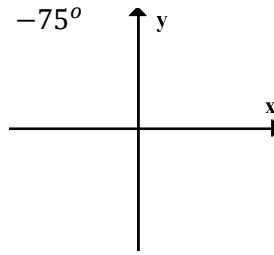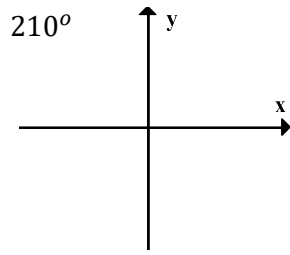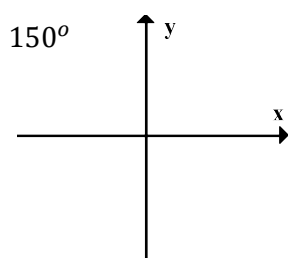
150°

210°

-75°

350°

Sketch θ_r

30° In Quadrant I

70° In Quadrant II

20° In Quadrant III

45° In Quadrant IV

Find θ_r for each θ_{stp}

$\theta_{stp} = 150^o$

$\theta_{stp} = 220^o$

$\theta_{stp} = 65^o$

$\theta_{stp} = 315^o$
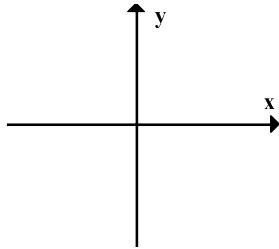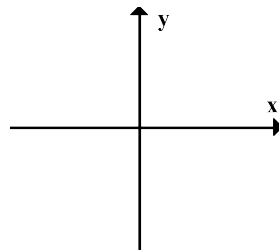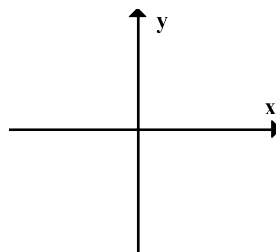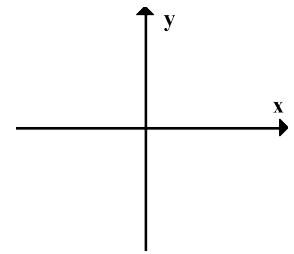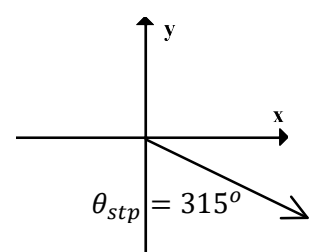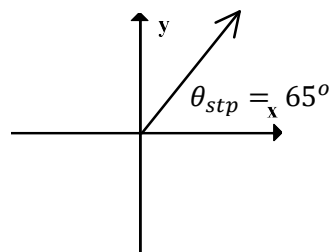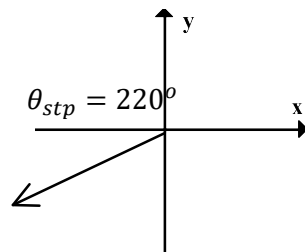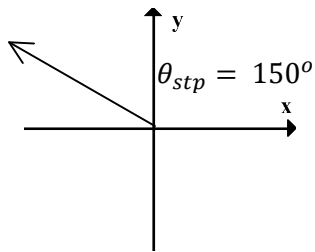
Find the smallest positive θ_{stp} for each θ_r

$\theta_r = 35^o$

$\theta_r = 55^o$

$\theta_r = 42^o$

$\theta_r = 60^o$
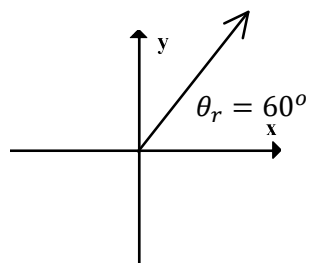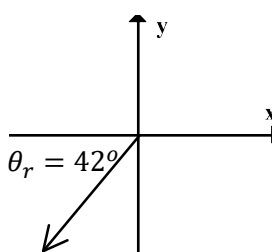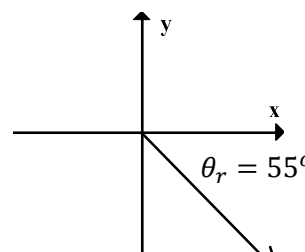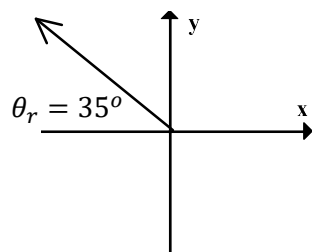
C11 - 2.1 - $Sketch, Find \ -\theta_{stp}, \theta_{cot} \ HW$

Find a negative θ_{stp} for each θ_r

$\theta_r = 35^o$

$\theta_r = 55^o$

$\theta_r = 42^o$

$\theta_r = 60^o$
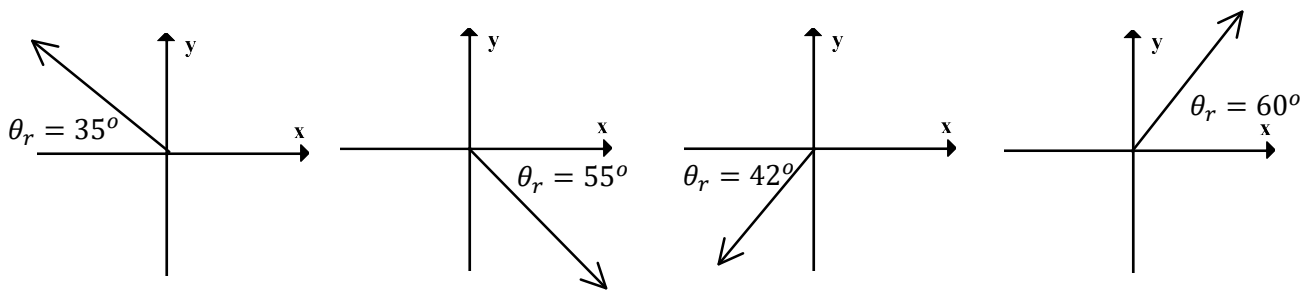
Find a positive and negative θ_{cot} for each θ_{stp}

$\theta_{stp} = 135^o$

$\theta_{stp} = -55^o$

$\theta_{stp} = 230^o$

$\theta_{stp} = 50^o$
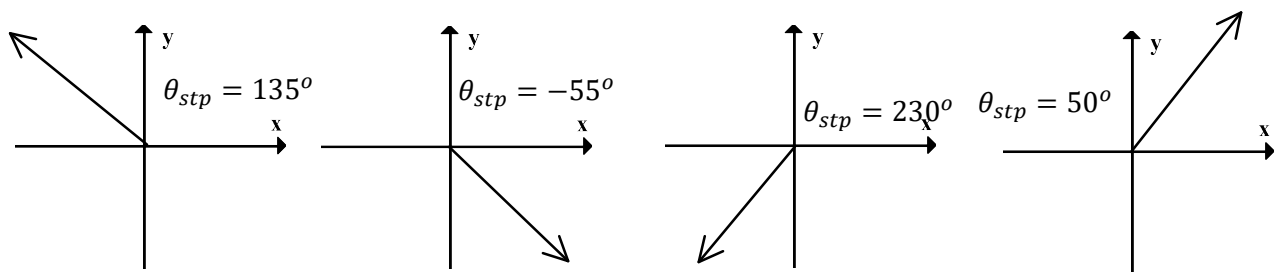
C11 - 2.2 - ASTC +/− HW

Draw 2 triangles in the quadrants for the following statements

$\cos\theta > 0$
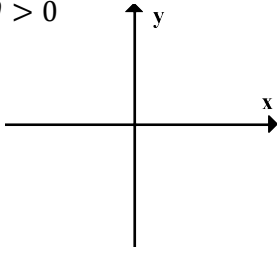
$\tan\theta > 0$
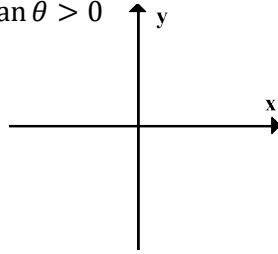
$\sin\theta > 0$
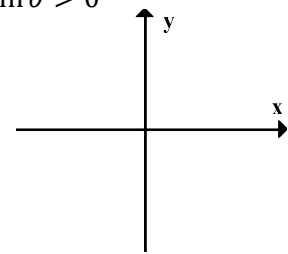
$\cos\theta < 0$
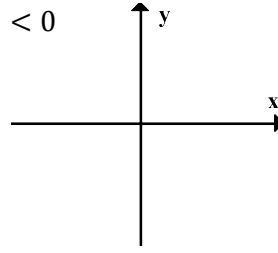
$\tan\theta < 0$
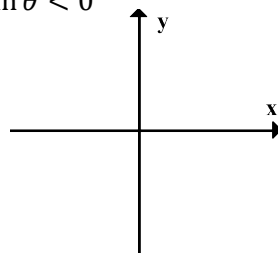
$\sin\theta < 0$
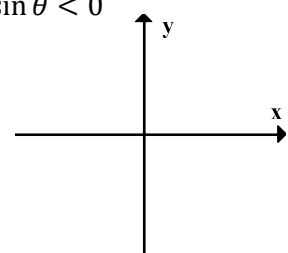
Draw a triangle in the quadrant for following statements

$\cos\theta > 0$ *and* $\sin\theta < 0$

$\cos\theta < 0$ *and* $\tan\theta > 0$

$\tan\theta > 0$ *and* $\sin\theta > 0$

$\cos\theta < 0$ *and* $\sin\theta < 0$

$\cos\theta < 0$ *and* $\tan\theta < 0$

$\tan\theta < 0$ *and* $\sin\theta > 0$

$\cos\theta < 0$ *and* $\sin\theta > 0$

$\cos\theta > 0$ *and* $\tan\theta < 0$

$\tan\theta < 0$ *and* $\sin\theta < 0$

$$SOH\ CAH\ TOA$$

Find sinx, cox, and tanx for the following points. And θ_{stp}

(4,3)

$sinx =$

$cosx =$

$tanx =$

$\theta_{stp} =$

(−3,4)

$sinx =$

$cosx =$

$tanx =$

$\theta_{stp} =$

(−3, −4)

(−5,12)

(6,8)

(8, −6)

(3,4)　　　(2, $\sqrt{5}$)　　　(5,12)　　　(5, $4\sqrt{6}$)

$$\boxed{SOH\ CAH\ TOA}$$

Find $sinx$, cox, and $tanx$ for the following points. And θ_{stp}

$(-2,5)$

$sinx =$

$cosx =$

$tanx =$

$\theta_{stp} =$

$(3,-3)$

$sinx =$

$cosx =$

$tanx =$

$\theta_{stp} =$

$(-5,-7)$

$(-3,8)$

$(4,2)$

$(7,-1)$

C11 - 2.3 - Trig Ratio Equations HW

Solve for $x, 0 \leq x < 360,$ *answer should say* $x =$

$sinx = 0.6$

$cosx = -\dfrac{1}{4}$

$cosx = 0.45$

$tanx = \dfrac{4}{5}$

$tanx = \dfrac{1}{5}$

$sinx = \dfrac{1}{3}$

$sinx = -0.1$

$cosx = -0.5$

$tanx = -0.866$
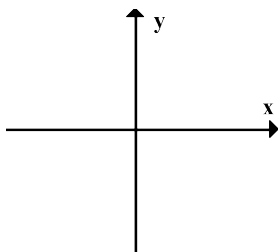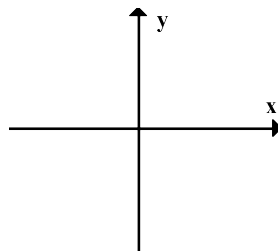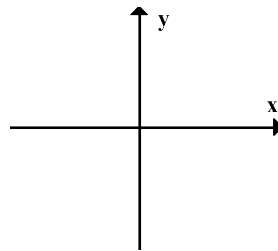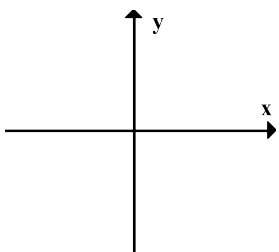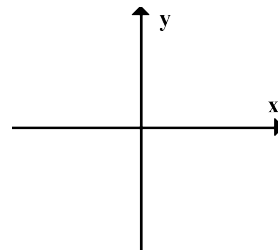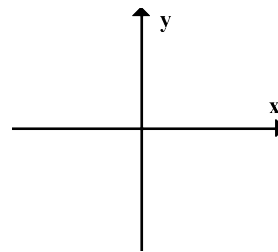
$sinx = -0.2$ $\qquad$ $tanx = 0.866$ $\qquad$ $cosx = 2$ $\qquad$ $sinx = 0.5$ $\qquad$ $tanx = -1$

C11 - 2.4 - Special Trig Ratios HW

Find $sinx, cox,$ and $tanx$ for the following points. And θ_{stp}

(1,1)

$sinx =$

$cosx =$

$tanx =$

$\theta_{stp} =$

$(-\sqrt{3}, 1)$

$sinx =$

$cosx =$

$tanx =$

$\theta_{stp} =$

$(1, -\dfrac{1}{\sqrt{3}})$

$(-1,1)$

$(-3\sqrt{3}, -\sqrt{3})$

$(-2\sqrt{3}, -2)$

C11 - 2.4 - Special Trig Ratios HW

Solve using the Special Triangles and ASTC and the Unit Circle
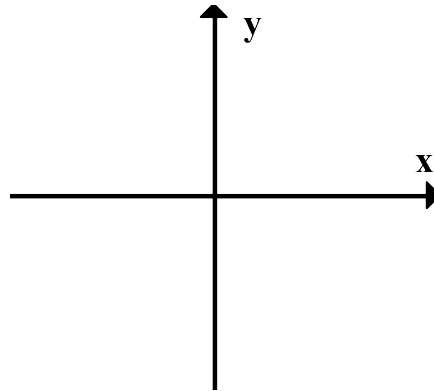
y

x

$sin30 =$ $sin150 =$ $sin210 =$ $sin330 =$

$cos30 =$ $cos150 =$ $cos210 =$ $cos330 =$

$tan30 =$ $tan150 =$ $tan210 =$ $tan330 =$

y

x

$sin45 =$ $sin135 =$ $sin225 =$ $sin315 =$

$cos45 =$ $cos135 =$ $cos225 =$ $cos315 =$
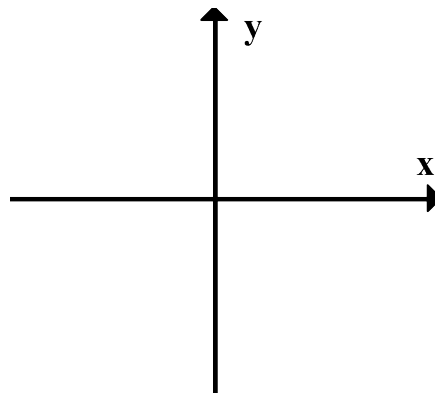
$tan45 =$ $tan135 =$ $tan225 =$ $tan315 =$

C11 - 2.5 - Special Trig Equations HW

Solve for $x, 0 \leq x < 360$, answer should say $x =$

$sinx = \dfrac{1}{2}$

$cosx = \dfrac{1}{\sqrt{2}}$

$sinx = \dfrac{\sqrt{3}}{2}$

$cosx = \dfrac{\sqrt{3}}{2}$

$tanx = 1$

$cosx = -\dfrac{1}{\sqrt{2}}$

$tanx = -1$

$sinx = -\dfrac{1}{\sqrt{2}}$

$sinx = -\dfrac{\sqrt{3}}{2}$
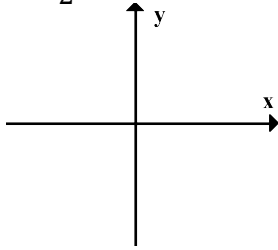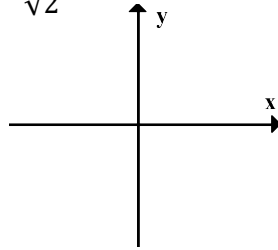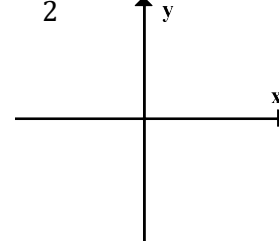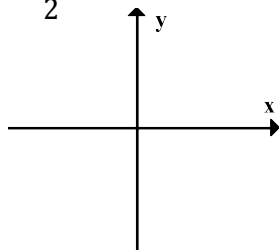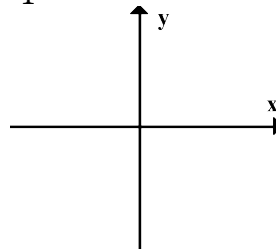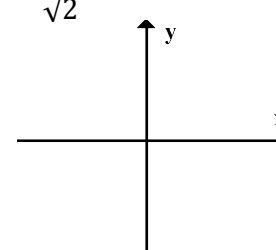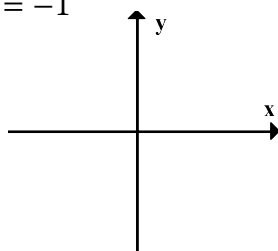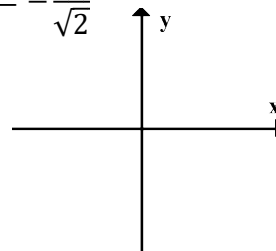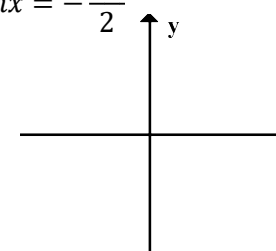
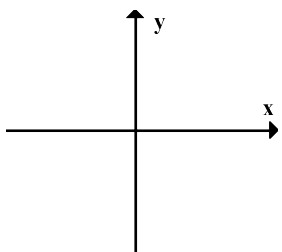$sinx = -\dfrac{1}{2}$ $tanx = \sqrt{3}$ $cosx = -\dfrac{\sqrt{3}}{2}$ $sinx = \sqrt{3}$ $tanx = \dfrac{\sqrt{3}}{2}$
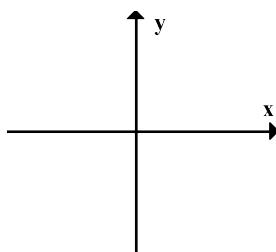
C11 - 2.5 - Algebra Special Trig Equations HW
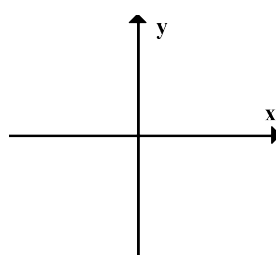
Solve for $x, 0 \leq x < 360$

$2sinx = 1$

$\sqrt{2}cosx = 1$

$-2sinx = \sqrt{3}$

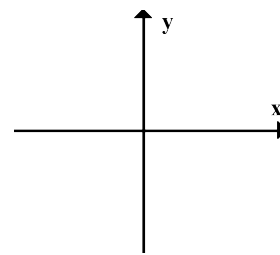$-\sqrt{2}sinx - 1 = 0$
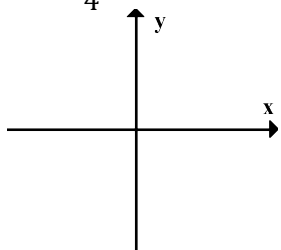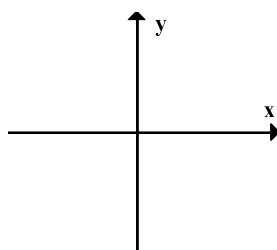
$2\sin^2 x - 1 = 0$

$tanx - 2 = -3$
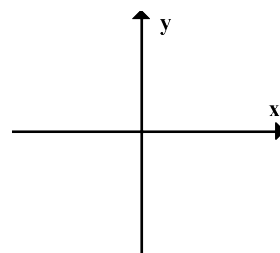
$\sin^2 x = \dfrac{1}{4}$

$2\cos^2 x = 1$

$\tan^2 x = 1$

$2tanx = 2$

$4\cos^2 x - 1 = 0$
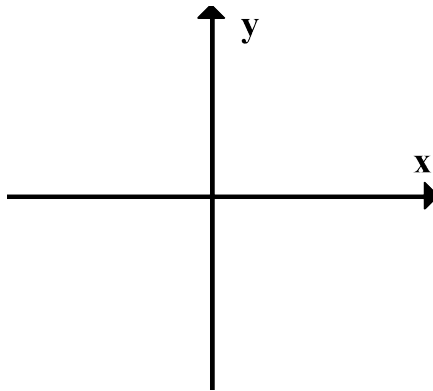
$2sinx = -\sqrt{3}$

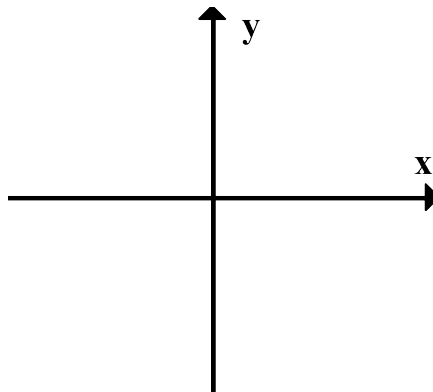$2cosx = -\sqrt{3}$
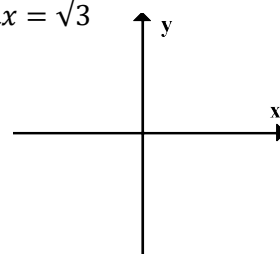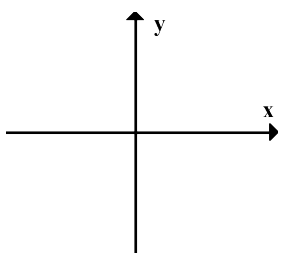
$2cosx + 1 = 0$

C11 - 2.6 - Unit Circle HW

Solve using the Unit Circle

$sin0 =$ $sin90 =$ $sin180 =$ $sin270 =$ $sin360 =$

$cos0 =$ $cos90 =$ $cos180 =$ $cos270 =$ $cos360 =$

$tan0 =$ $tan90 =$ $tan180 =$ $tan270 =$ $tan360 =$

$sin360 =$ $sin450 =$ $sin540 =$ $sin630 =$ $sin720 =$

$cos360 =$ $cos450 =$ $cos540 =$ $cos630 =$ $cos720 =$

$tan360 =$ $tan450 =$ $tan540 =$ $tan630 =$ $tan720 =$

C11 - 2.6 - Unit Circle Trig Ratios HW

$$SOH\ CAH\ TOA$$

Find $sinx, cox,$ and $tanx$ for the following points. And θ_{stp}
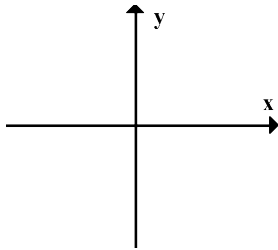
(0,1)

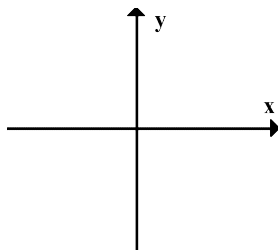$sinx =$

$cosx =$

$tanx =$

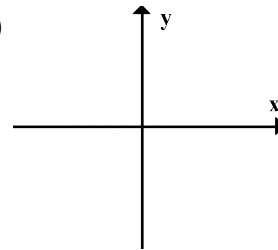$\theta_{stp} =$

(−1,0)

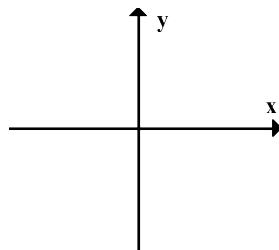$sinx =$

$cosx =$

$tanx =$

$\theta_{stp} =$
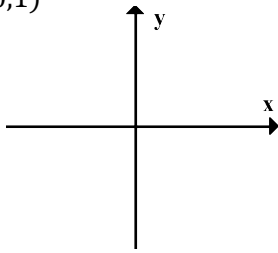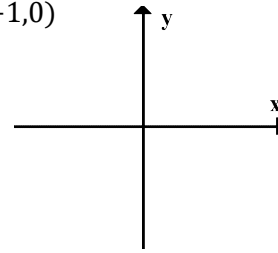
(1,0)

(0,−1)
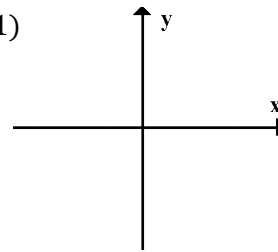
(0,2)

(0,−3)

(4,0)

(0,−5)
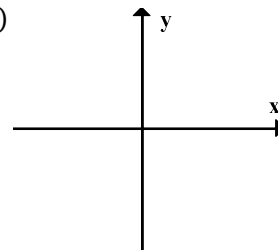
C11 - 2.6 - Unit Circle Trig Equations HW

Solve for $\theta, 0 \le \theta < 360$

$sin\theta = 1$

$cos\theta = 0$

$cos\theta = -1$

$sin\theta = -1$

$tan\theta = und$

$sin\theta = 0$

$cos\theta = 1$

$tan\theta = 0$
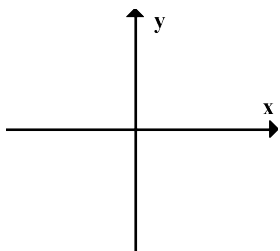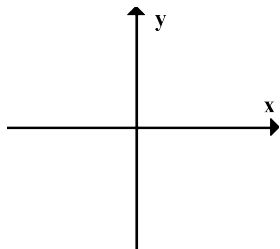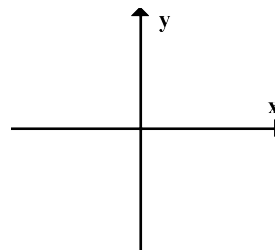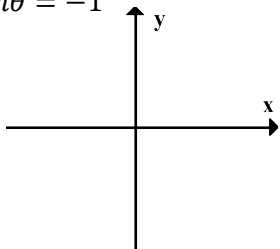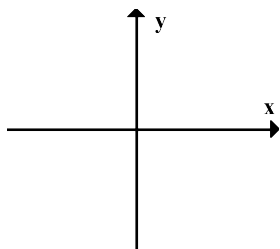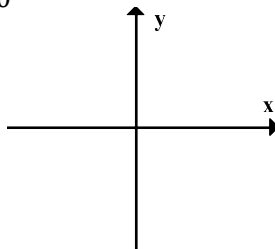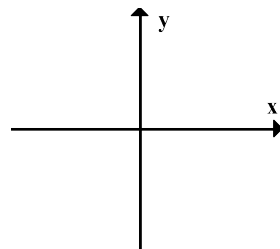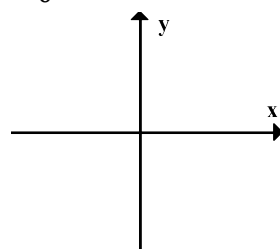
$sin^2\theta - 1 = 0$
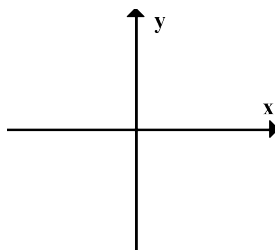
C11 - 2.6 - Factoring Trig Equations HW

Solve for x, 0 ≤ x < 360, by factoring, then setting factors equal to zero and solve.

$\sin^2 x - \sin x = 0$
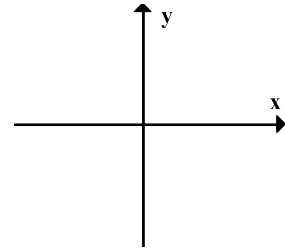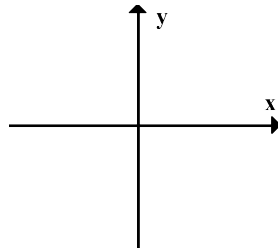
$\cos^2 x - \cos x - 2$
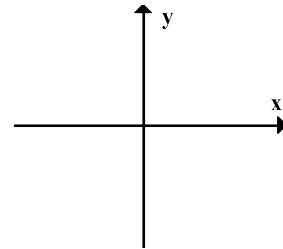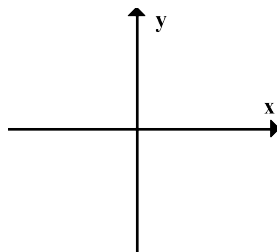
$2\cos^2 x - \cos x - 1$

$\cos^2 x + \cos x = 0$

$2\sin^2 x + \sin x - 1$

$\sin^2 x + \sin x - 2 = 0$

C11 - 2.9 - Solve ASS Triangle Without Sine Law Notes

Solve the triangle
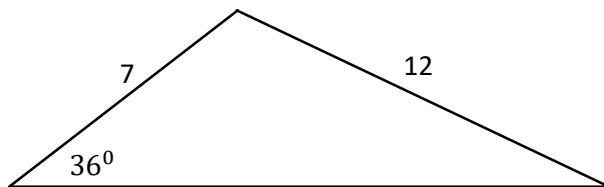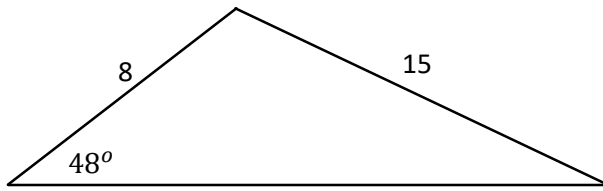
C11 - 2.9 - Algebra Sine Law HW

Solve for the variable.

$$\frac{a}{sin35^o} = \frac{4}{sin27^o}$$

$$\frac{12}{sin52} = \frac{c}{sin30}$$

$$\frac{b}{sin20^o} = \frac{2}{sin45^o}$$

$$\frac{b}{sin35^o} = \frac{4}{sin27^o}$$

$$\frac{12}{sin52} = \frac{a}{sin30}$$

$$\frac{c}{sin25^o} = \frac{8}{sin67^o}$$

$$\frac{sinA}{14} = \frac{sin29^o}{8}$$

$$\frac{sin23}{7} = \frac{sinC}{5}$$

$$\frac{sin42}{2} = \frac{sinA}{3}$$

$$\frac{sinC}{5} = \frac{sin11^o}{1}$$

$$\frac{sin43}{21} = \frac{sinC}{4}$$

$$\frac{sin73}{2} = \frac{sinA}{7}$$

C11 - 2.9 - Sine Law HW

Solve for b.

B

42°

8

54°
b

A   C

B

71°

12

29°

A

C   b

Solve for the angle C

20

A   C

17

45°

B

A

12

15

73°

B
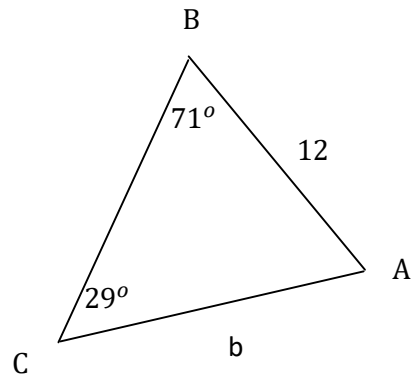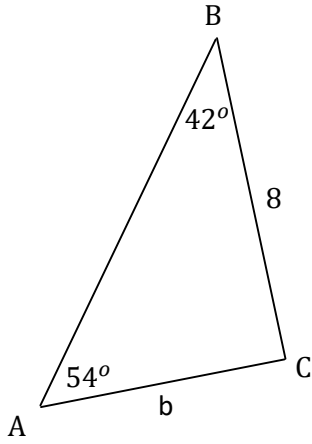
C

C11 - 2.9 - Sine Law HW

Solve for b.

Solve for the angle C

Solve the triangle.

9

34°

12

15

29°

20

C11 - 2.10 - Algebra Cosine Law HW

Solve for the variable. Enter the right hand side into your calculator, square root both sides.

$c^2 = 4^2 + 5^2 - 2(4)(5)cos30$

$c^2 = 10^2 + 7^2 - 2(10)(7)cos60$

$c^2 = 8^2 + 9^2 - 2(8)(9)cos45$

$c^2 = 11^2 + 4^2 - 2(11)(4)cos50$

Solve for the variable. Do algebra to isolate $cosC$, then take the inverse $\cos^{-1}(\ )$

$7^2 = 5^2 + 9^2 - 2(5)(9)cosC$

$11^2 = 4^2 + 12^2 - 2(4)(12)cosC$

$9^2 = 8^2 + 7^2 - 2(8)(7)cosC$

$20^2 = 21^2 + 35^2 - 2(21)(35)cosC$

C11 - 2.10 - Cosine Law HW
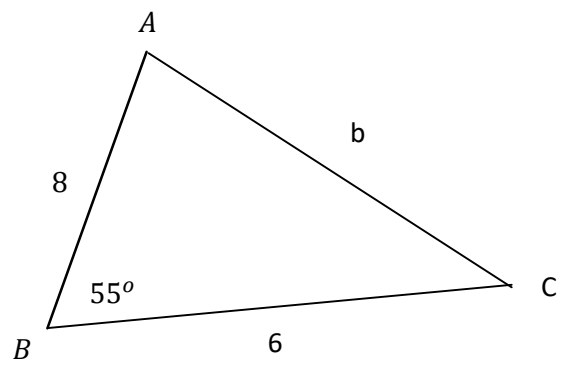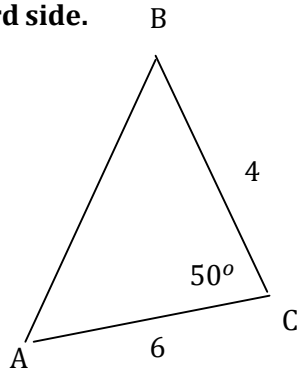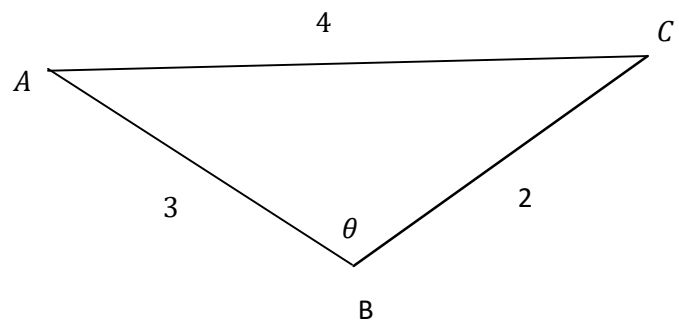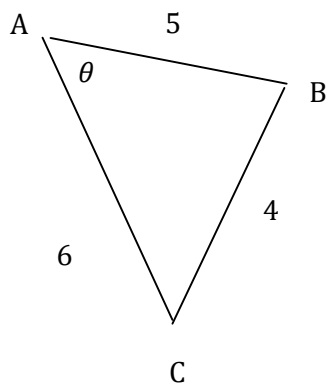
Find the third side.

B

4

50°

C

6

A

A

8

b

55°

B

6

C

Find θ.

A

5

θ

B

4

6

C

4

C

A

3

θ

2

B

C11 - 2.10 - Cosine Law HW

Find the third side.

B

6   a

29°   C

A   8

A

15   b

62⁰   C

B   12

Find θ.

13   C

A

9

10   θ

B

A   17

θ   C

22

18

B
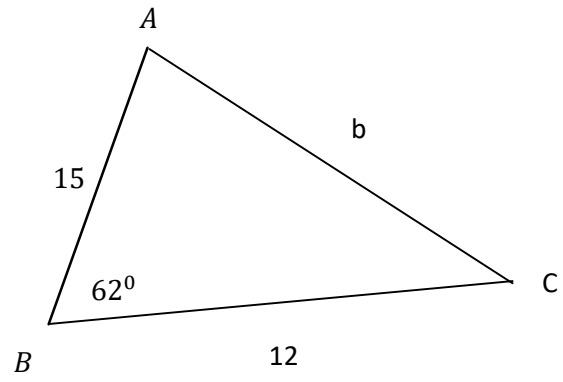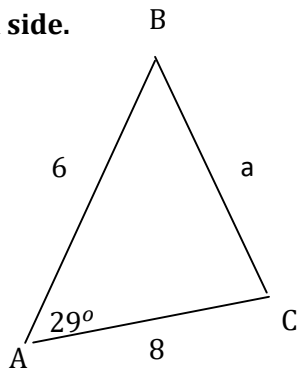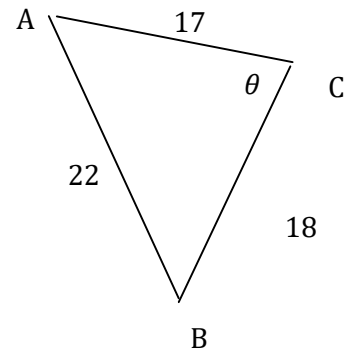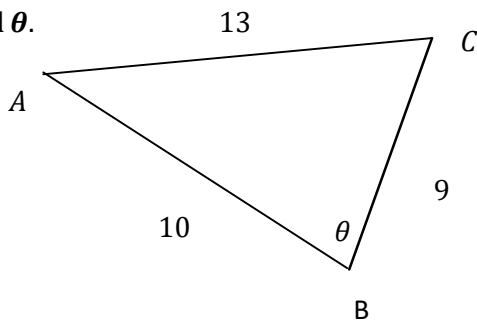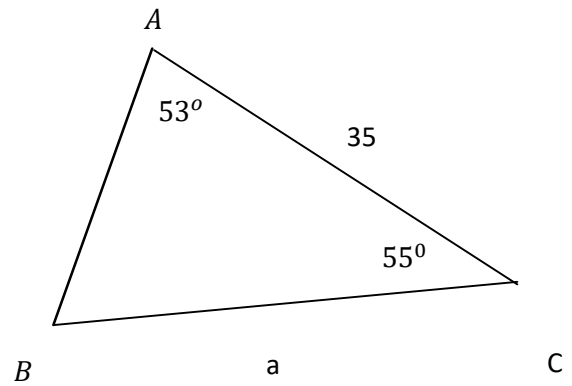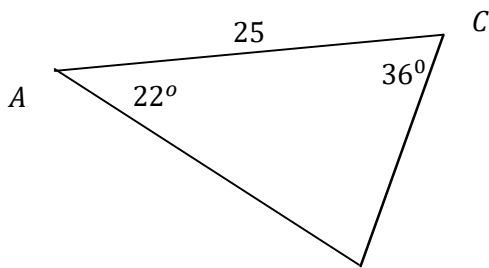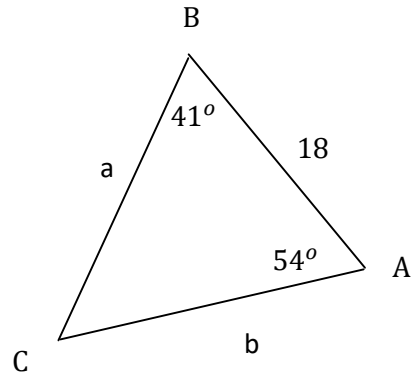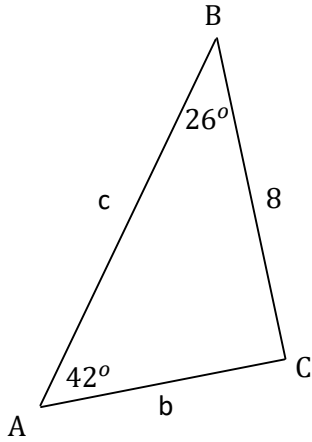
Solve the triangle.

C11 - 2.11 - Solve Triangle Cosine/Sine Law HW

Solve the triangle.

B

10 a

39º C
A   12

A

42⁰

35 b

34⁰

B   18   C

20
C
A

11

15

B

A   8

C

29

13

B
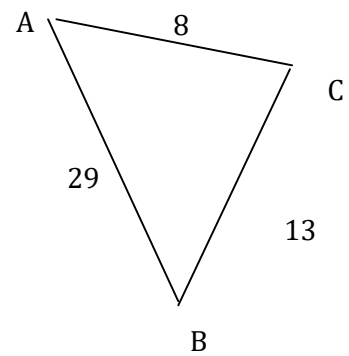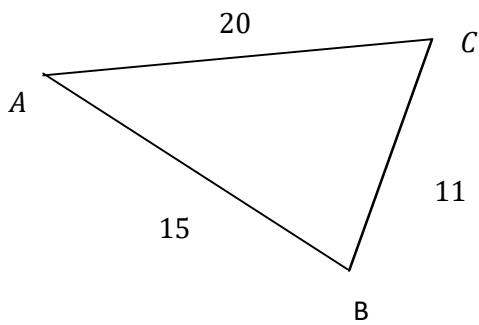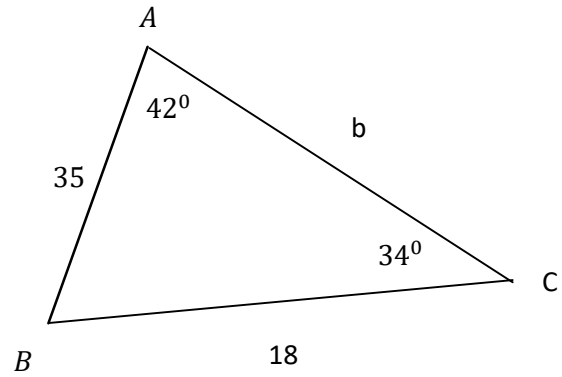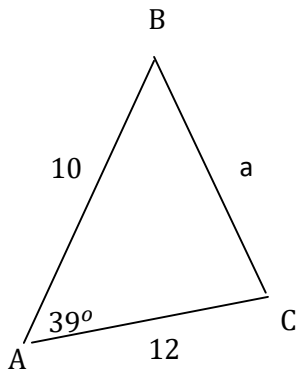
C11 - 2.12 - ASS Sine Law HW

How many triangles? Solve the triangles.

$\angle A = 30^o, b = 10, a = 5$

$\angle A = 30^o, b = 10, a = 4$

$\angle A = 30^o, b = 10, a = 12$

$\angle A = 30^o, b = 10, a = 6$

$\angle A = 120^o, b = 8, a = 10$

$\angle A = 120^o, b = 8, a = 4$

C11 - 3.1 - Graph Stand Form TOV WS $(x^2 + q)$

Graph the following equations using a table of values. State the Vertex.

$y = x^2$

x	y
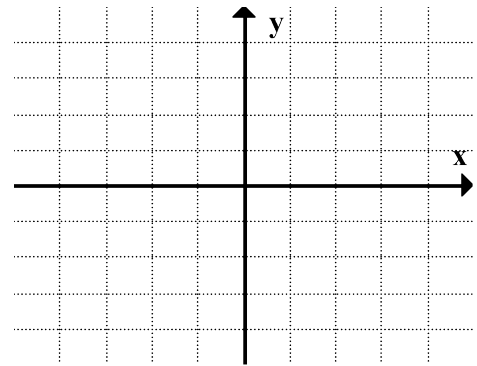
$y = x^2 - 4$

x	y
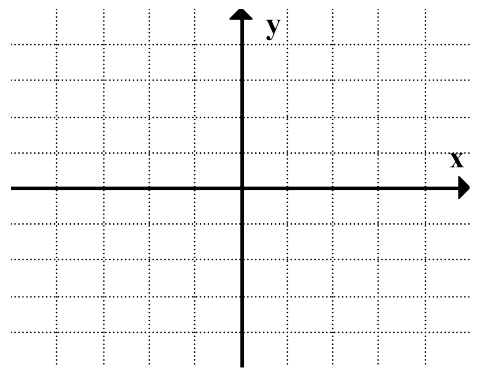
$y = x^2 + 2$

x	y
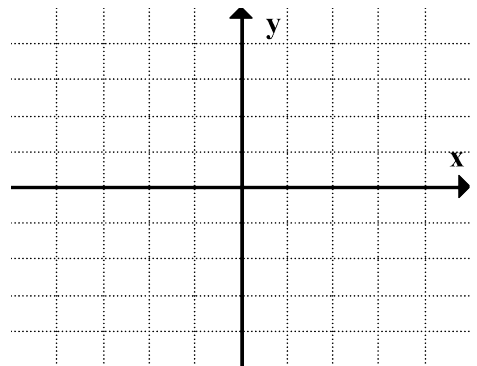
$y = x^2 - 1$

x	y
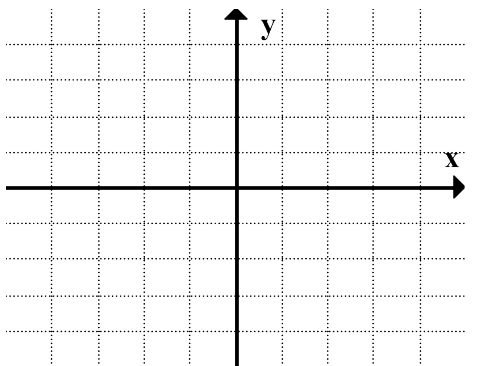
C11 - 3.1 - Graphing Vertex Form TOV WS (a=1)

Graph the following equations using a table of values, on graph paper. State the Vertex. Choose increments away from Vertex.

$y = x^2$ ⟶ $y = 1(x - 0)^2 + 0$

x	y

$y = (x + 2)^2$

x	y
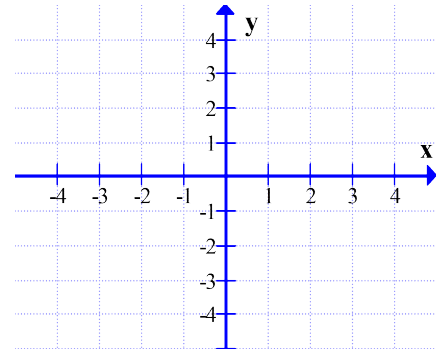
$y = (x - 1)^2$ ⟶ $y = (x - 1)^2 - 0$

x	y
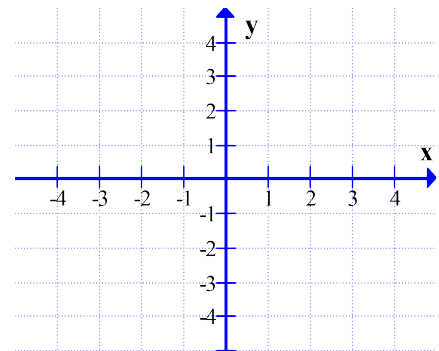
$y = (x - 3)^2$

x	y
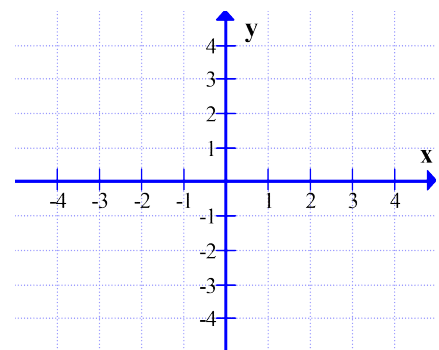
C11 - 3.1 - Graph Stand Form TOV WS $(-ax^2)$

Graph the following equations using a table of values, on graph paper. State the Vertex. Choose your own increments.

$y = -x^2 + 4$

x	y
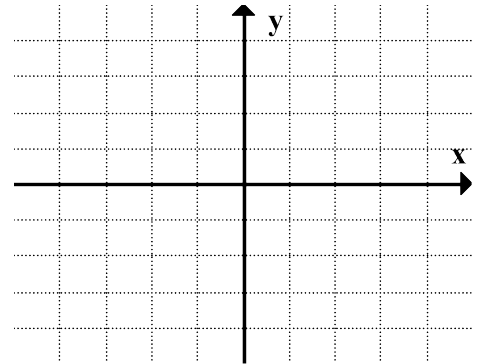
$y = -x^2$

x	y
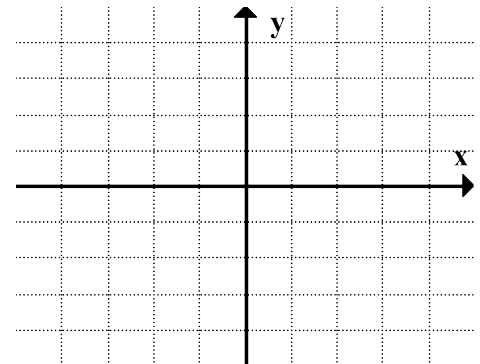
$y = -2x^2 + 2$

x	y
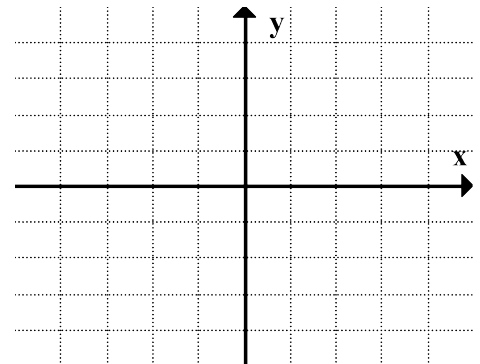
$y = -x^2 + 1$

x	y
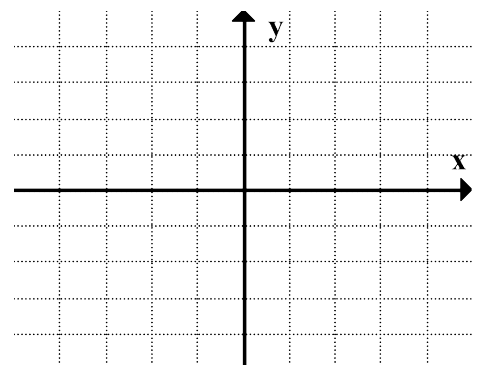
C11 - 3.2 - Graph Stand Form TOV WS (ax^2)

Graph the following equations using a table of values, on graph paper. State the Vertex. Choose your own increments.

$y = 2x^2$

x	y
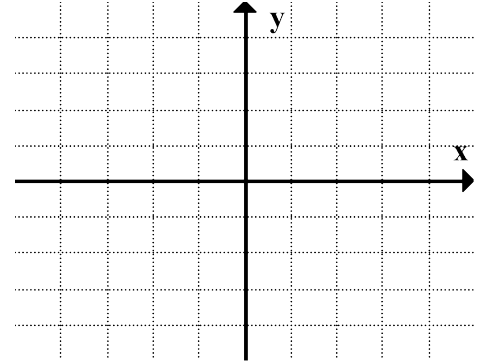
$y = 2x^2 - 2$

x	y
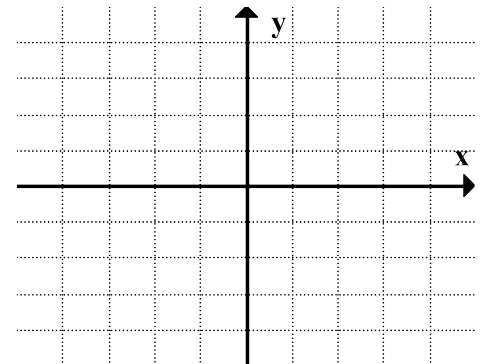
$y = 2x^2 + 2$

x	y
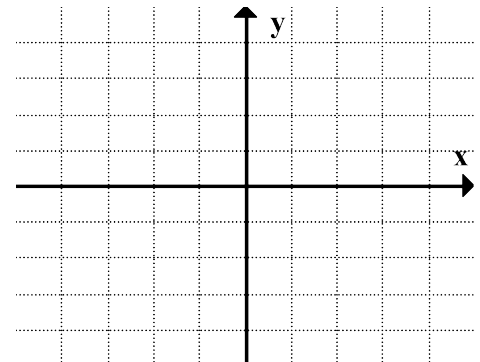
$y = 3x^2 - 3$

x	y
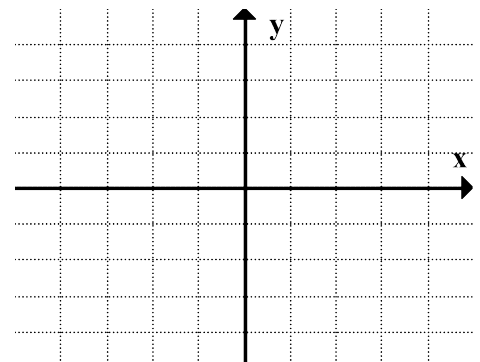
C11 - 3.2 - Graph Stand Form TOV WS (ax^2)

Graph the following equations using a table of values. State the Vertex.

$y = x^2$

x	y
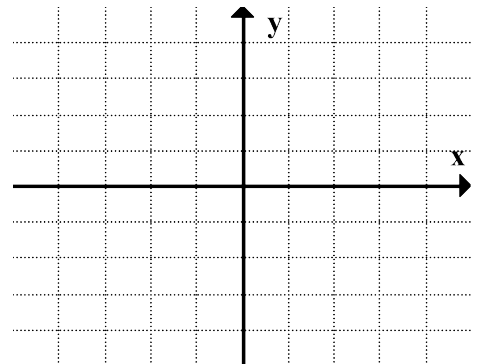
$y = 2x^2$

x	y
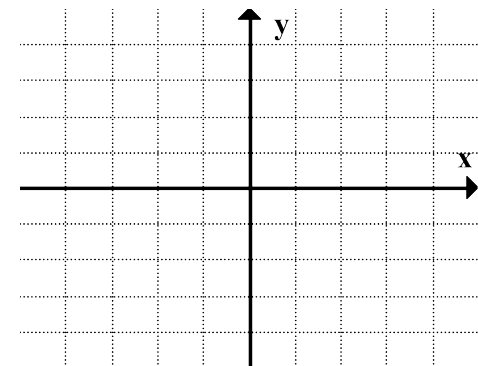
$y = \dfrac{1}{2}x^2$

x	y
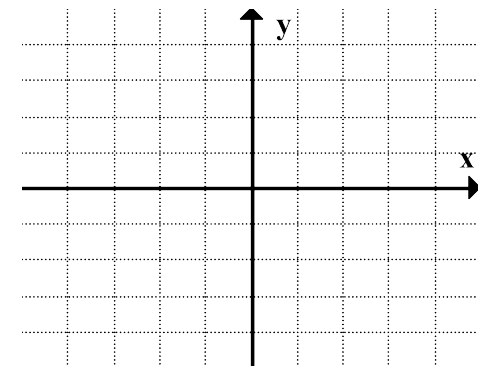
$y = 3x^2 - 1$

x	y
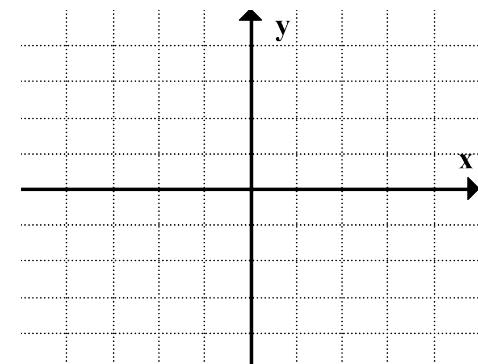
C11 - 3.2 - Graph Stand Form TOV WS ($\frac{1}{2}x^2$)

Graph the following equations using a table of values, on graph paper. State the Vertex. Choose your own increments.

$y = \frac{1}{2}x^2$

x	y
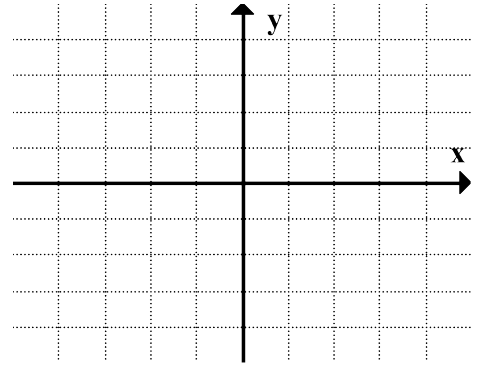
$y = \frac{1}{2}x^2 - 4$

x	y
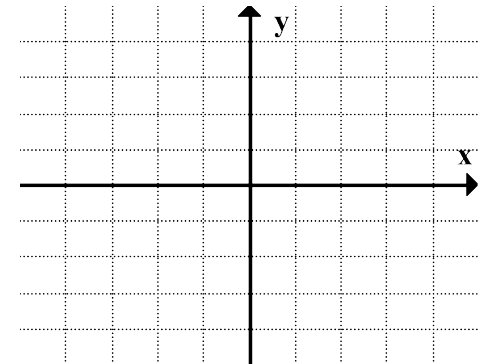
$y = \frac{1}{2}x^2 - 8$

x	y
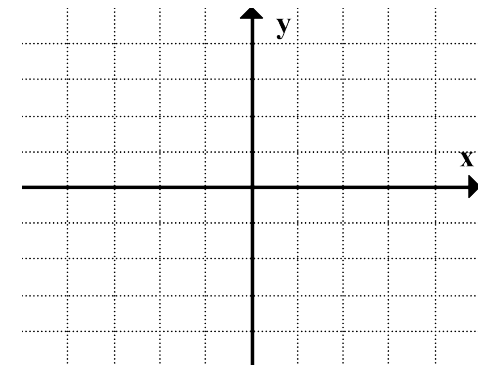
$y = \frac{1}{4}x^2 + 1$

x	y
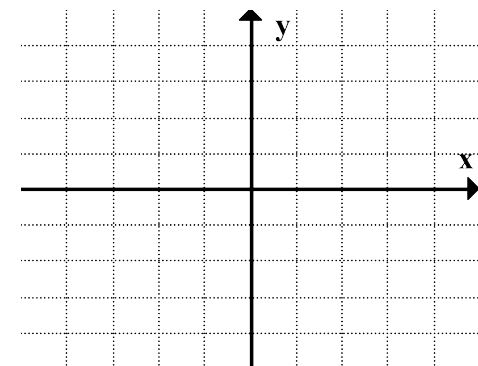
C11 - 3.2 - Graphing Vertex Form TOV WS $(a = -1)$

Graph the following equations using a table of values, on graph paper. Choose your own increments.

$y = (x - 2)^2 - 4$

x	y
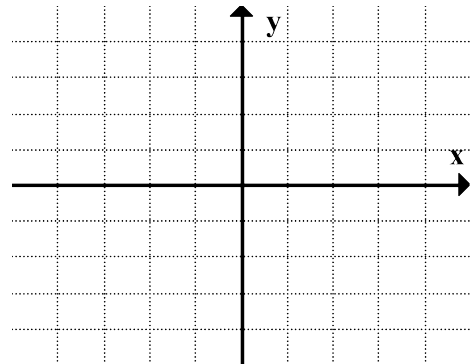
$y = (x + 1)^2 - 4$

x	y
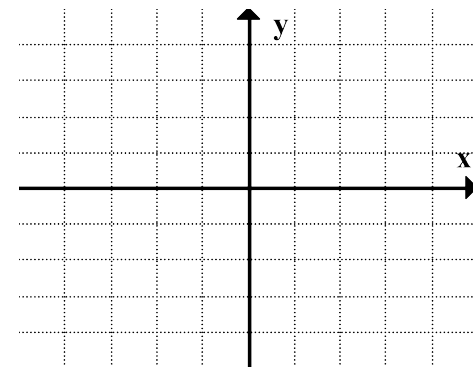
$y = (x - 2)^2 - 1$

x	y
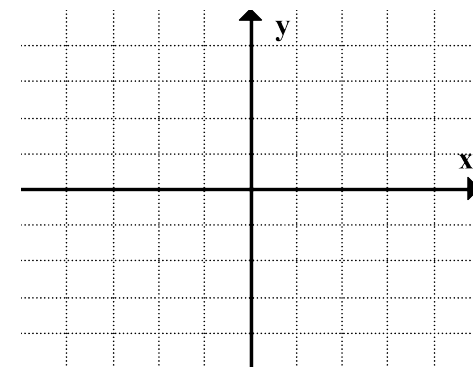
$y = (x + 5)^2 - 1$

x	y
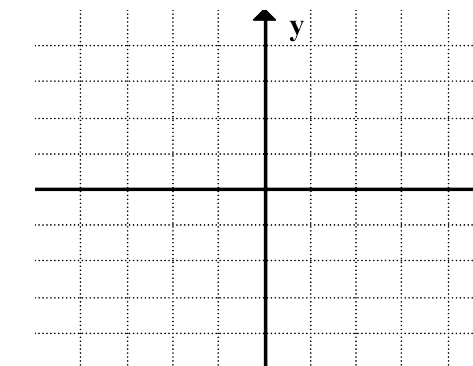
C11 - 3.2 - Graphing Vertex Form TOV WS $(a \neq 1)$

Graph the following equations using a table of values, on graph paper. Choose your own increments.

$y = 2(x + 1)^2 + 1$

x	y
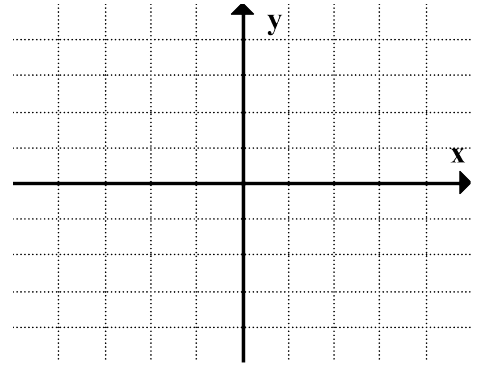
$y = 2(x + 2)^2 + 3$

x	y
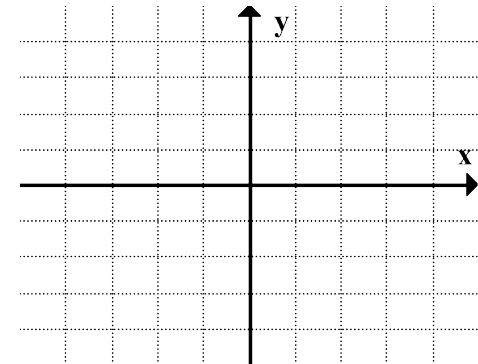
$y = \dfrac{1}{2}(x - 1)^2 - 2$

x	y
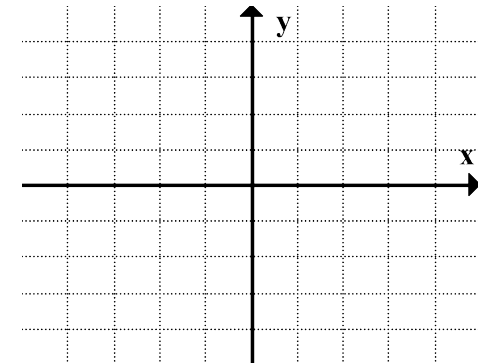
$y = 3(x + 1)^2 + 2$

x	y
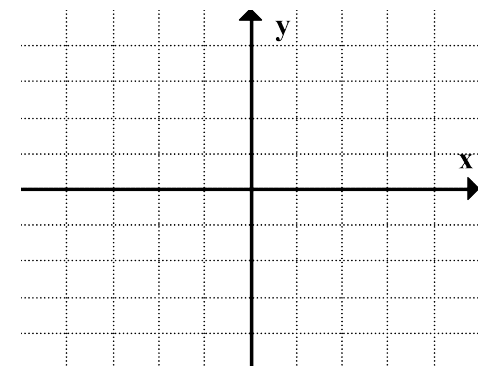
C11 - 3.2 - Graphing Vertex Form TOV WS $(a = -\#)$

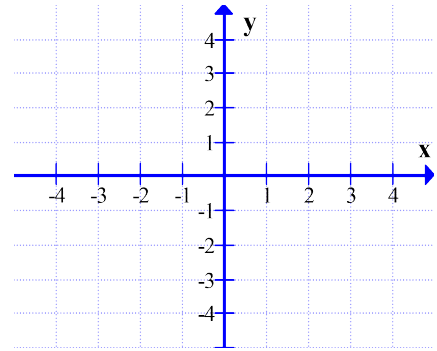**Graph the following equations using a table of values, on graph paper. Choose your own increments.**

$y = -(x + 1)^2 + 1$

x	y
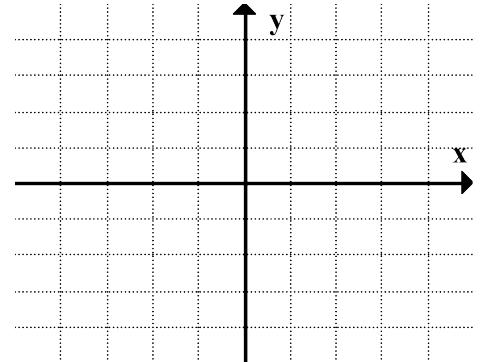
$y = -2(x + 2)^2 - 2$

x	y
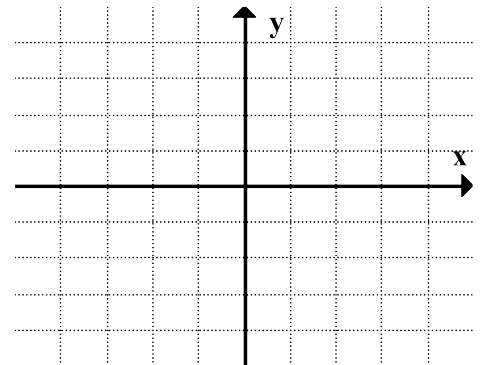
$y = -\dfrac{1}{2}(x - 1)^2 + 2$

x	y
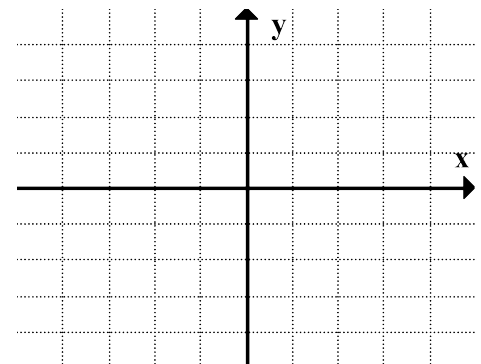
$y = -3(x + 1)^2 + 3$

x	y
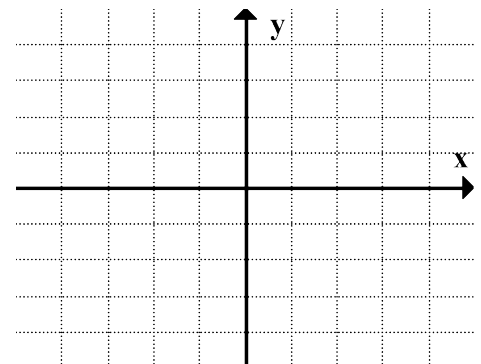
C11 - 3.3 - Foil HW

Multiply Out

$y = (x + 3)^2$

$y = (x - 2)^2$

$y = \left(x + \dfrac{1}{2}\right)^2$

$y = (x + 4)^2 - 3$

$y = (x - 2)^2 + 1$

$y = \left(x + \dfrac{1}{3}\right)^2 + \dfrac{1}{2}$

$y = 2(x - 3)^2 - 1$

$y = 2(x + 1)^2 + 1$

$y = 2(x - 2)^2 - 2$

$y = -(x - 4)^2 - 1$

$y = -2(x - 3)^2 + 2$

$y = -\dfrac{1}{2}(x + 2)^2 - 3$

C11 - 3.3 - Completing the Square/Perfect Square HW

What value of "c" makes the following a perfect square, factor and write as a perfect square and the vertex: (x, y) and sketch a graph.

$y = x^2 + 6x + c$
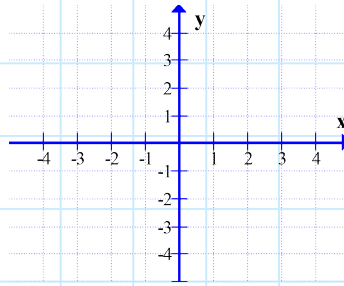
Complete the square and write the vertex: (x, y) and sketch a graph.

$y = x^2 + 6x + 5$
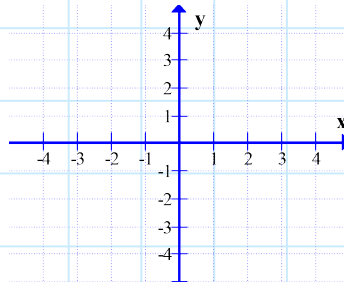
$y = 2x^2 - 8x + 9$
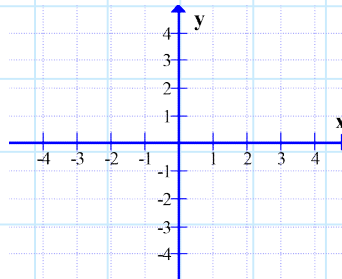
$y = x^2 - 8x + c$

$y = x^2 - 4x - 5$

$y = 2x^2 - 10x$

$y = -2x^2 - 12x - 15$

$y = x^2 + 4x + 1$

$y = x^2 + 8x$

$y = \frac{1}{2}x^2 + 4x + 2$

$y = 2x^2 - 6x + 17$

C11 - 3.3 - Completing the Square/Perfect Square HW

Perfect square: $y = (x - p)^2$

What value of "c" makes the following a perfect square, factor and write as a perfect square.

$$y = x^2 + \frac{1}{2}x + c$$

$$y = x^2 - \frac{2}{3}x + c$$

Complete the square and write the vertex: (x, y).

$$y = x^2 + \frac{1}{2}x + 5$$

$$y = x^2 + \frac{1}{4}x + 1$$

$$y = x^2 - \frac{3}{2}x + 4$$

$$y = x^2 + \frac{2}{3}x$$

$$y = \frac{1}{2}x^2 - 2x + 9$$

$$y = 2x^2 - \frac{2}{3}x + 17$$

$$y = -2x^2 - \frac{3}{2}x - 15$$

$$y = 2x^2 - .05x$$

C11 - 3.4 - Find Equation in Vertex Form HW

Find equation in Vertex Form and graph.

Vertex: $(1, -4)$
Point: $(2, -3)$
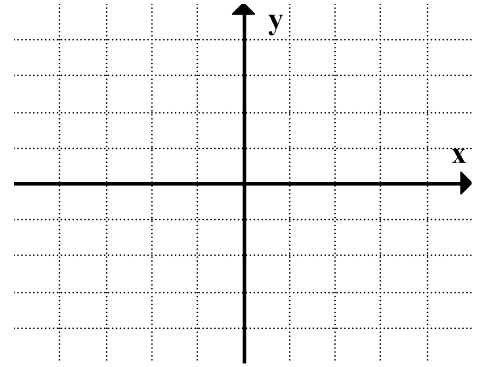
Vertex: $(-1, -2)$
Point: $(1, 2)$
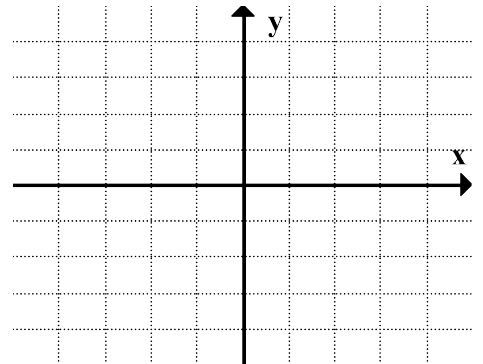
Vertex: $(3, -4)$
Point: $(2, -2)$
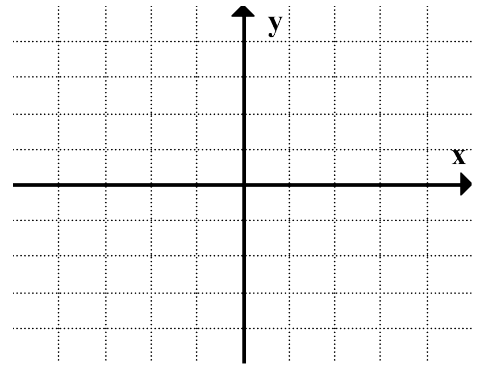
Vertex: $(2, 1)$
$y - int = -3$
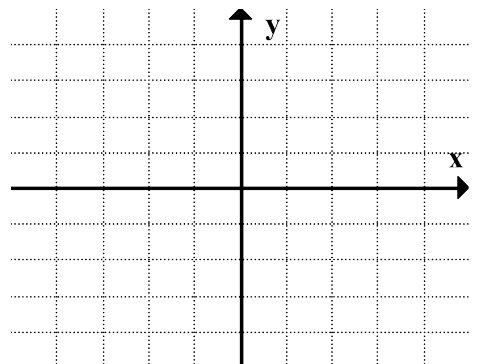
C11 - 3.5 - Vertex:$\left(-\dfrac{b}{2a}, y\right)$ Quadratics in Standard Form WS

Find the Vertex

$$Vertex = \left(\dfrac{-b}{2a}, y\right)$$

$$\boxed{Vertex = \left(\dfrac{-b}{2a}, y\right)}$$

$y = x^2 - 6x - 7$

$y = x^2 + 4x - 5$

$y = x^2 + 8x + 7$

$y = x^2 + 6x - 16$

$y = x^2 - 2x - 15$

$y = x^2 - 10x + 9$

$y = 2x^2 - 12x - 14$

$y = 4x^2 + 6x - 3$

$y = 4x^2 + 2x - 1$

$y = x^2 + \dfrac{1}{2}x + 5$

$y = 2x^2 - \dfrac{1}{2}x + 9$

$y = -2x^2 - .05x$

C11 - 3.6 - Quadratic Word Problems

Two numbers have a difference of 8. Their product is a minimum. Sketch a Graph and Find the numbers.

Two numbers differ by 10. The product of the larger number and twice the smaller number is a minimum. Sketch a Graph and Find the numbers.

Two numbers sum to 8. The sum of their squares is a minimum. Sketch a Graph and Find the numbers.

C11 - 3.7 - Quadratic Word Problems

Jack has 60m of fencing to build a three sided fence on the side of his house. Determine the maximum possible area of the fenced area, and the dimensions of the fence.

A rectangular 3 sided fence that is split in half is against a wall. The total fencing length is 42 m. What is the max area of the fence and dimensions?

Wall

w w w

l
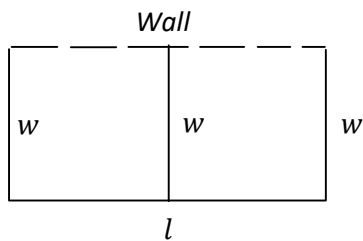
C11 - 3.8 - Bridge Find Equation HMK

A bridge has pillars 20 m tall and are 80 m apart. The maximum at the center of the bridge is 60 m tall. Find the equation of the parabolic bridge. What is the height 6 m away from each pillar.

C11 - 4.1 - x-intercepts $x^2 + bx + c$ "$a = 1$" WS

Factor the following, set $y = 0$, and set your brackets equal to zero seperately and solve.
Then sketch a graph and label the $x - $ inercepts

$y = x^2 + 5x - 6$ _____ X _____ =
   _____ + _____ =

x	y
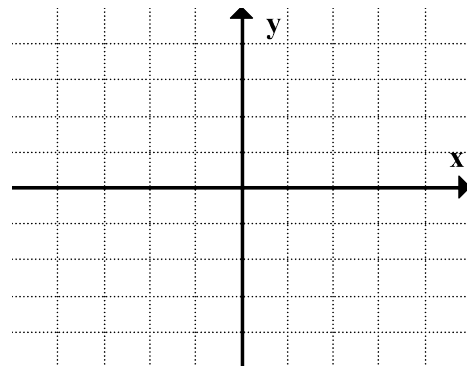
$y = x^2 + 6x + 8$ _____ X _____ =
   _____ + _____ =

x	y
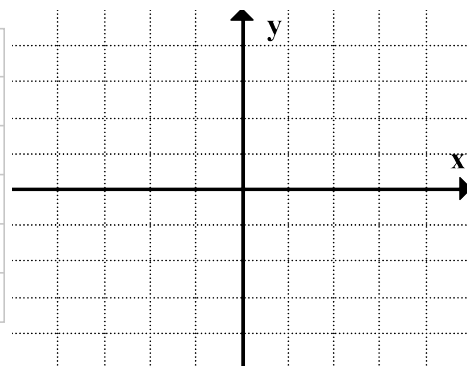
$y = x^2 + 3x - 4$ _____ X _____ =
   _____ + _____ =

x	y
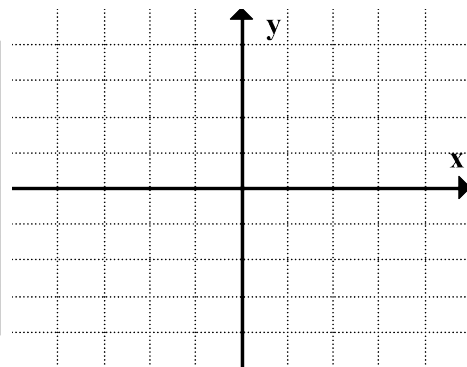
$y = x^2 - 4x - 5$ _____ X _____ =
   _____ + _____ =
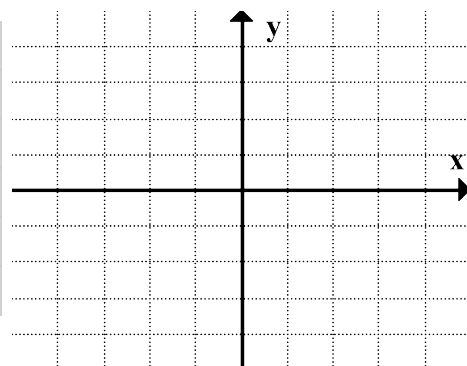
x	y

C11 - 4.1 - x-intercepts $x^2 + bx + c$ "$a = 1$" WS

Factor the following, set $y = 0$, *and set your brackets equal to zero seperately and solve.*
Then sketch a graph and label the $x-$ inercepts

$y = x^2 + 7x + 12$ $\underline{\quad} X \underline{\quad} =$
$\underline{\quad} + \underline{\quad} =$

x	y

$y = x^2 + 4x + 3$ $\underline{\quad} X \underline{\quad} =$
$\underline{\quad} + \underline{\quad} =$

x	y

$y = x^2 - 3x - 4$ $\underline{\quad} X \underline{\quad} =$
$\underline{\quad} + \underline{\quad} =$

x	y

$y = x^2 + 4x - 5$ $\underline{\quad} X \underline{\quad} =$
$\underline{\quad} + \underline{\quad} =$

x	y
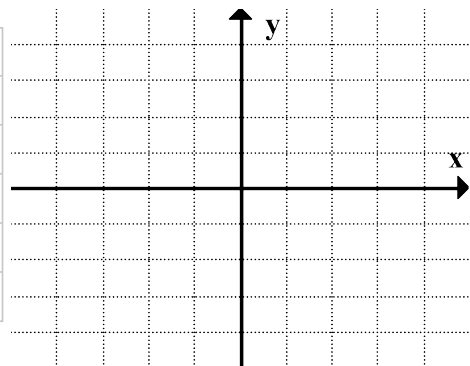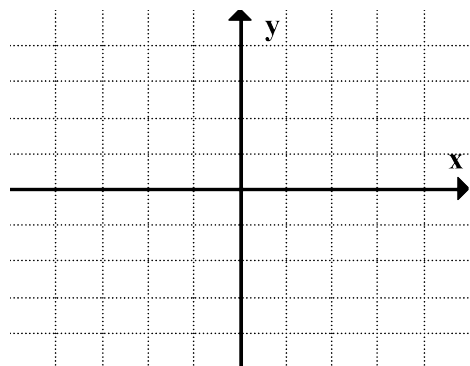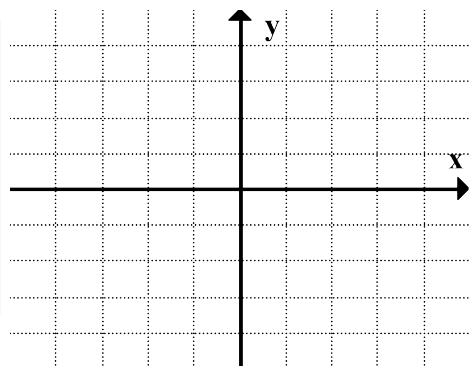
C11 - 4.1 - x-intercepts "$x^2 + bx + c$, $c = 0$" WS

Factor the following, set $y = 0$, and set your Factors equal to zero seperately and solve.
Then sketch a graph and label the $x - inercepts$

$y = x^2 + 2x$

x	y
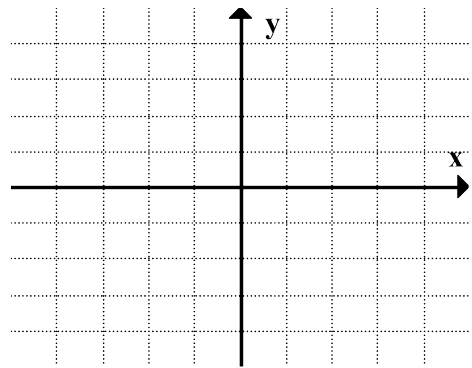
$y = x^2 - 3x$

x	y
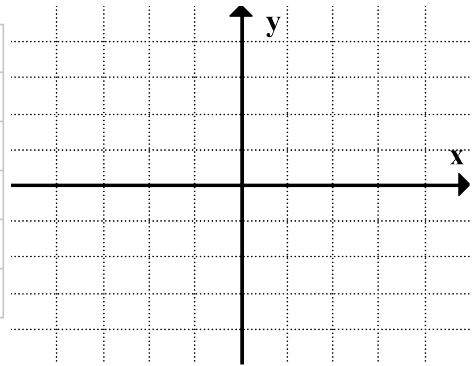
$y = -x^2 - 5x$

x	y
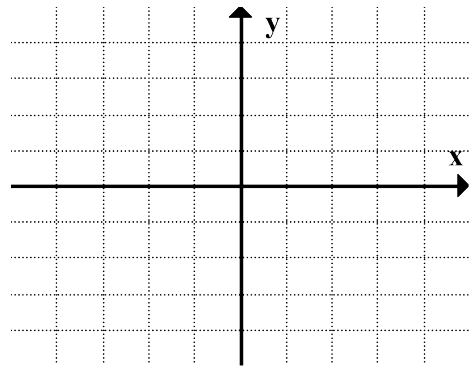
$y = 2x^2 + 6x$

x	y
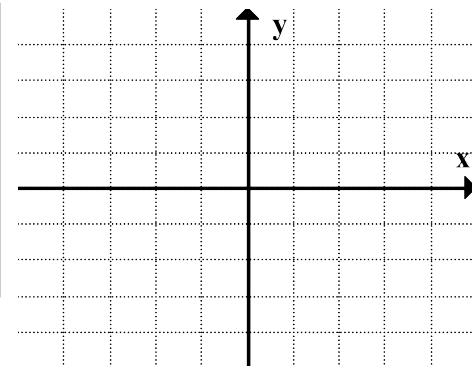
C11 - 4.1 - x-intercepts $ax^2 + bx + c$ "$a \neq 1$" WS

Factor the following, set $y = 0$, and set your brackets equal to zero seperately and solve.
Then sketch a graph and label the $x-$ inercepts

$y = 2x^2 + 7x + 6$ _____ X _____ =
_____ + _____ =

x	y

$y = 2x^2 - 3x - 2$ _____ X _____ =
_____ + _____ =

x	y

$y = 2x^2 + 3x - 9$ _____ X _____ =
_____ + _____ =

x	y

$y = 3x^2 - 5x + 2$ _____ X _____ =
_____ + _____ =

x	y

C11 - 4.1 - x-intercepts $x^2 - \#$ WS

Factor the following, set $y = 0$, and set your brackets equal to zero seperaely and solve.
Then sketch a graph and label the x − intercepts

$y = x^2 - 1$

x	y

$y = x^2 - 25$

x	y
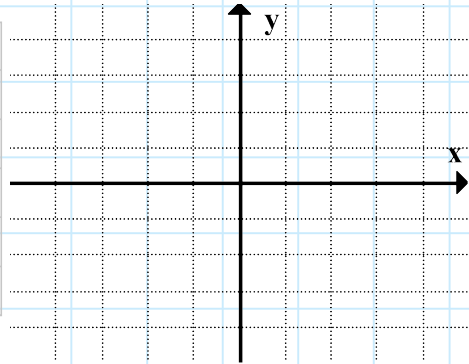
$y = 4 - x^2$

x	y
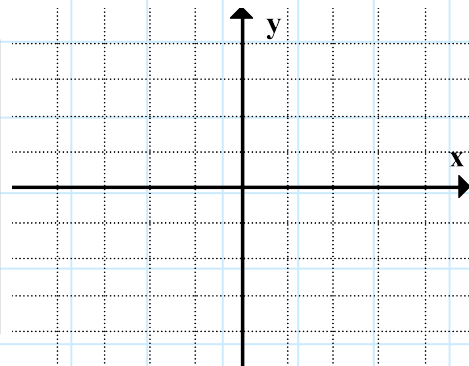
$y = x^2 + 1$

x	y
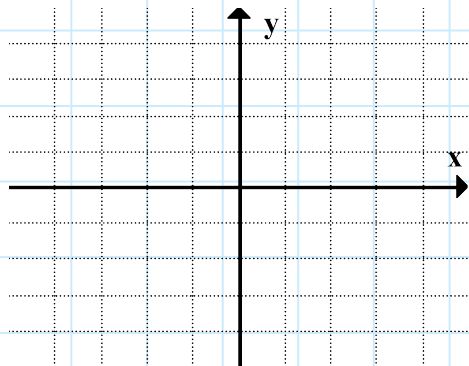
C11 - 4.1 - x-intercepts $x^2 - \#$ WS

Factor the following, set $y = 0$, and set your brackets equal to zero seperaely and solve.
Then sketch a graph and label the $x - intercepts$

$y = -x^2 + 9$

x	y
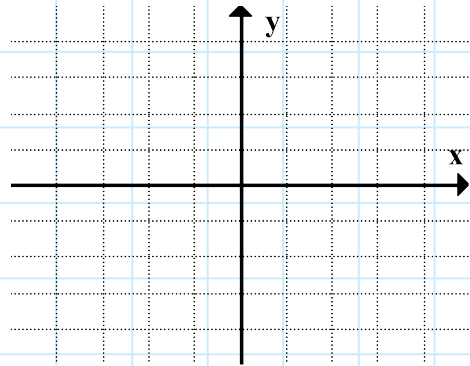
$y = 9x^2 - 4$

x	y
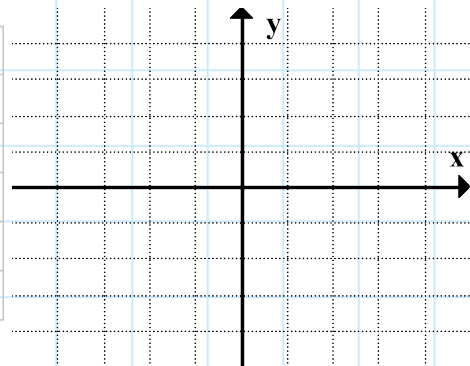
$y = 9 - 4x^2$

x	y
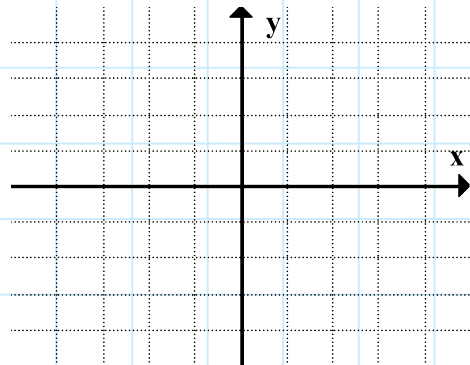
$y = 4x^2 + 4$

x	y
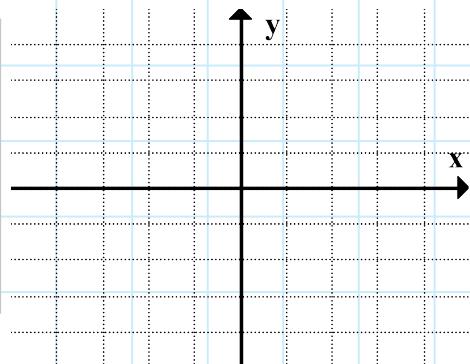
C11 - 4.1 - Graphing Factored Form TOV WS ($a \neq 1$)

Graph the following equations using a table of values.

$y = 2(x - 1)(x - 3)$

x	y
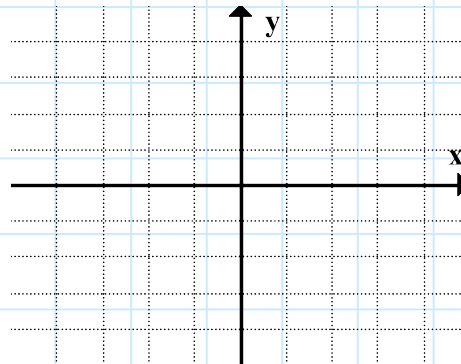
$y = 3(x + 2)(x + 4)$

x	y
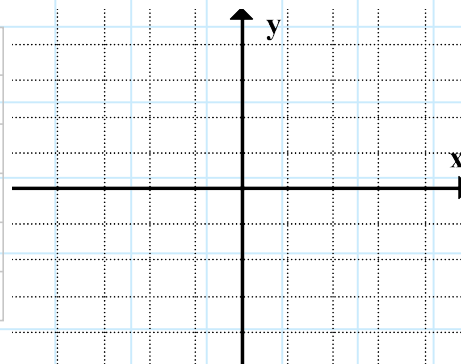
$y = -2(x - 1)(x - 5)$

x	y
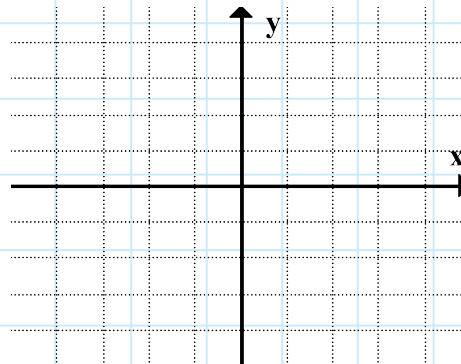
$y = \dfrac{1}{2}(x + 2)(x + 6)$

x	y
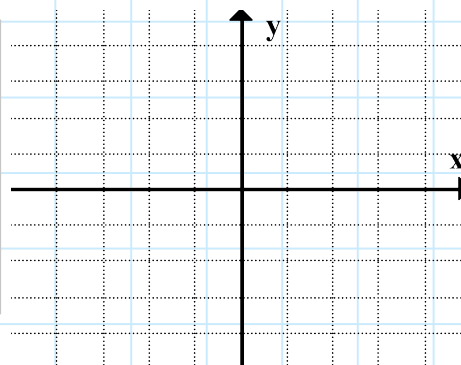
C11 - 4.2 - Find Equation in Standard Form HW

Find equation in Standard Form

$x - int = 1 \ and \ 5$
$a = 1$

$x - int = 1 \ and \ 5$
$(3, -8)$

$x - int = -3 \ and \ 1$
$a = 2$

$x - int = 2 \ and \ 4$
$a = \dfrac{1}{2}$

$x - int = 2 \ and \ 4$
$(0,4)$

Factored form, with fractions

$x - int = \dfrac{1}{2} \ and \ \dfrac{9}{2}$

Standard form, no fractions

$x - int = \dfrac{1}{2} \ and \ \dfrac{9}{2}$

$$y = x^2 - 4x + 3$$

Factor. Set $y = 0.$ *Solve for* $x - intercepts.$

Graph using a TOV or your Calculator

x	y
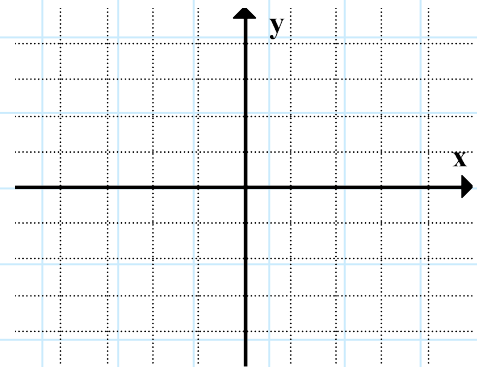
Set $y = 0,$ *complete the square, add or subtact,*
possibly divide, square root both sides,
dont forget about $\pm$, *add or subtact to solve.*

Solve for $x - intercepts$
using quadratic formula

C11 - 4.3 - Solve by Completing the Square HW

Set $y = 0$, *complete the square, add or subtact, possibly divide, square root both sides,*
dont forget about $\pm$, add or subtact to solve.

$y = x^2 - 6x + 5$

$y = x^2 - 8x + 15$
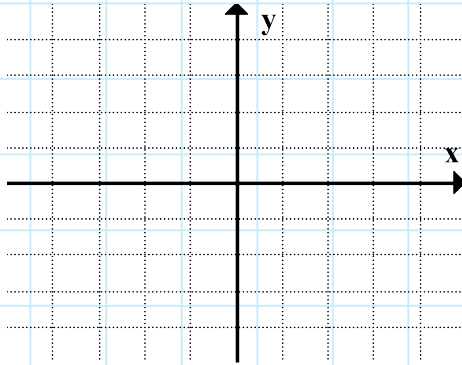
$y = x^2 - 10x + 24$

$y = x^2 + 4x - 5$

$y = x^2 - 10x + 16$

$y = 2x^2 - 8x - 13$

$y = -3x^2 + 12x + 8$

$y = 2x^2 + 6x - 9$

C11 - 4.4 - Solve by Quadratic Formula HW

Solve for x − intercepts using quadratic formula

$y = x^2 - 6x + 5$
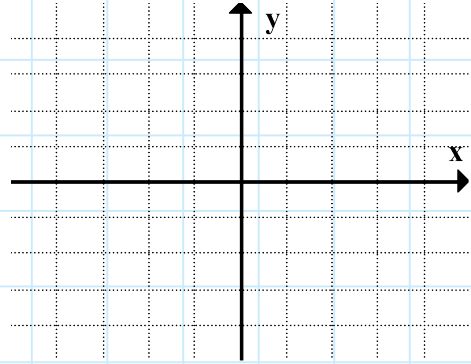
$y = x^2 - 10x + 24$

$y = x^2 - 10x + 16$

$y = x^2 + 4x - 5$

$y = x^2 - 8x + 15$

$y = 2x^2 + 6x - 9$

$y = -3x^2 + 12x + 8$

$y = 2x^2 - 8x + 13$

C11 - 4.5 - Discriminant HW

Find the number of x-intercepts using the discriminant: $b^2 - 4ac$

$y = x^2 - 4x + 5$ $y = x^2 - 16$ $y = x^2 + 6x + 8$

$y = x^2 - 8x + 16$ $y = x^2 + 4x$ $y = x^2 - 2x - 24$

$y = x^2 - 4x + 5$ $y = -x^2 + 4x - 5$

C11 - 4.6 - Rectangular Garden

A rectangular garden has an area of 48 and a perimeter of 28. What are the lengths and widths?

A rectangular garden has an area of 56 and a perimeter of 30. What are the lengths and widths?

C11 - 4.7 - Quadratic Word Problems

The sum of a number and its square is six. Find the number.

Let $x = 1st$ #

$$x + x^2 = 6$$
$$\underline{} -6 \quad -6$$
$$x^2 + x - 6 = 0$$
$$(x - 2)(x + 3) = 0$$

$$\underline{\quad -2 \quad} \times \underline{\quad 3 \quad} = -6$$

$$\underline{\quad -2 \quad} + \underline{\quad 3 \quad} = 1$$

$$x - 2 = 0$$

$$\boxed{x = 2}$$

$$x + x^2 = 6$$
$$2 + 2^2 = 6$$
$$6 = 6$$ ✓

$$x + 3 = 0$$

$$\boxed{x = -3}$$

$$x + x^2 = 6$$
$$-3 + (-3)^2 = 6$$
$$-3 + 9 = 6$$
$$6 = 6$$ ✓

The difference of a number and its square is 30. Find the number. *Tricky

Find two numbers who sum to 5 and multiply to 6. Find the numbers.

C11 - 4.7 - Quadratic Word Problems

Find two consecutive integers whose product is 156.

The product of two consecutive odd integers is 35. Find the numbers.

The sum of the squares of two consecutive integers is 61. Find the numbers.

The difference of squares of two consecutive odd numbers is $-24.$ Find the numbers.

C11 - 4.8 - Max Height/Total Distance

The height vs distance of a bow and arrow shot off a cliff is represented by following equation:

$$h = -2d^2 + 8d + 10$$

What is the maximum height and the distance it took to get there?   Draw on a graph.

What was the height of the cliff?

How far did the arrow go before it hit the ground?   Find Domain and Range

At what distance is the height 16 m? At what distance is the height greater than 0 16m?

C11 - 4.8 - Max Height/Total Distance

The height vs distance of a bow and arrow shot off a cliff is represented by following equation:

$$h = -5d^2 + 10d + 1$$

Draw on a graph.

What is the maximum height and the distance it took to get there?

What was the height of the cliff?

How far did the arrow go before it hit the ground?

Find Domain and Range

C11 - 4.8 - Max Height/Total time

The height vs time of a bow and arrow shot straight up is represented by following equation:

$$h = -5t^2 + 20t + 2$$

Draw on a graph.   What is the maximum height and the time it took to get there?

What was the height of the cliff?

How long did the arrow fly before it hit the ground?   Find Domain and Range

C11 - 5.0 - Square/Cube Radicals Equations HW

Solve for x,

$x^2 = 4$

$x^2 = 9$

$x^2 = -1$

$x^2 = 25$

$x^2 = 0$

$x^2 = -9$

$x^3 = 27$

$x^3 = 8$

$x^3 = 64$

$x^3 = -8$

$x^3 = -27$

$x^3 = -64$

$x^4 = 16$

$x^5 = 243$

$x^7 = 128$

$x^4 = -16$

$x^5 = -243$

$x^7 = -128$

$x^2 = 3$

$x^3 = 7$

$x^4 = -5$

C11 - 5.0 - Simplify Radicals Variables HW

Simplify.Variables can be either positive or negative.

$\sqrt{4}$

$\sqrt{2^2}$

$\sqrt{x^2}$

$\sqrt{16x^2}$

$\sqrt{9x^2}$

$\sqrt{x^6}$

$\sqrt{x^{10}}$

$\sqrt{4x^4}$

Simplify.Variables are positive

$\sqrt{x^2y^2}$

$\sqrt{x^3}$

$\sqrt{x^5}$

$\sqrt{8x^2y^3}$

$\sqrt[3]{27}$

$\sqrt[3]{27x^3}$

$\sqrt[3]{-27x^3}$

$\sqrt[3]{-8x^3}$

$\sqrt[3]{x^6}$

$\sqrt[3]{x^5}$

$\sqrt[3]{-x^7}$

$\sqrt[5]{x^6y^3}$

C11 - 5.0 - Simplify Radicals Factoring Notes

Simplify. Variables are positive. Possibly Factor.

$\sqrt{(x-2)^2}$

$\sqrt{(x+5)^2}$

$\sqrt{(x-.01)^2}$

$\sqrt[3]{(x-3)^3}$

$\sqrt[7]{(x-3)^7}$

$\sqrt[99]{(x-3)^{99}}$

$\sqrt{(x+3)(x+3)}$

$\sqrt{x^2+6x+9}$

$\sqrt{x^2+2x+1}$

$\sqrt{x^4+2x^2+1}$

$\sqrt{(x-1)(x^2-1)}$

$\sqrt{(Only\ This!)^2}$

C11 - 5.0 - Mixed Radicals HW

Write as Mixed Radicals

$\sqrt[2]{12} =$

$2\sqrt[2]{18} =$

$3\sqrt[2]{45} =$

$\frac{1}{5}\sqrt[2]{50} =$

$\frac{1}{8}\sqrt[2]{20x^2} =$

$\frac{\sqrt[2]{63}}{3}$

$\frac{3}{4}\sqrt[2]{24x^5} =$

$\frac{2}{5}\sqrt[2]{54} =$

$\frac{3}{5}\sqrt[2]{40} =$

$3\sqrt[3]{24} =$

$\frac{1}{9}\sqrt[3]{54x^3} =$

$2\sqrt[3]{135} =$

$\frac{3}{5}\sqrt[3]{40} =$

$\frac{2}{7}\sqrt[3]{189x^7} =$

$\frac{1}{2}\sqrt[3]{56} =$

$2/3\sqrt[3]{48} =$

$\frac{5}{6}\sqrt[3]{162} =$

$\frac{1}{4}\sqrt[3]{80} =$

C11 - 5.0 - Entire Radicals HW

Write as Entire Radicals

$2\sqrt[2]{3} =$

$3\sqrt[2]{2} =$

$5x\sqrt[2]{2} =$

$4\sqrt[2]{5} =$

$2x^2\sqrt[2]{7} =$

$7\sqrt[2]{2x}$

$4x\sqrt[2]{7x} =$

$7\sqrt[2]{6} =$

$13x^2\sqrt[2]{3x} =$

$2\sqrt[2]{99} =$

$5\sqrt[2]{1000} =$

$7\sqrt[2]{4} =$

$2\sqrt[3]{8} =$

$7\sqrt[3]{6} =$

$4xy\sqrt[3]{5xy} =$

$2\sqrt[3]{48} =$

$3\sqrt[3]{12} =$

$8\sqrt[3]{8} =$

C11 - 5.0 - Simplifying Radicals Decimals/Fractions HW

Simplify

$-\sqrt{16}$

$-\sqrt{9}$

$\sqrt{\dfrac{1}{16}}$

$\sqrt{\dfrac{1}{9}}$

$\sqrt{-9}$

$-\sqrt{-9}$

$\sqrt{.01}$

$\sqrt{.0625}$

$-\sqrt[4]{81}$

$\sqrt[3]{-27}$

$\sqrt[5]{-32}$

$\sqrt[3]{-0.125}$

C11 - 5.1 - Adding/Subtracting Radicals HW

Add or subtract the following radicals

$2\sqrt[2]{3} + 1\sqrt[2]{3} =$

$\sqrt[2]{5} + \sqrt[2]{5} =$

$2\sqrt[2]{3} + 3\sqrt[2]{3} =$

$5\sqrt[2]{2} - 2\sqrt[2]{2} =$

$6x\sqrt[2]{3} - 8x\sqrt[2]{3} =$

$-7\sqrt[2]{2} - 2\sqrt[2]{2} =$

$\sqrt[3]{7} + \sqrt[3]{7} =$

$5\sqrt[3]{7} + \sqrt[3]{7} =$

$4\sqrt[3]{5x} - 9\sqrt[3]{5x} =$

Simplify and Add or subtract the following radicals

$\sqrt[2]{12} + 2\sqrt[2]{3} =$

$2\sqrt[2]{12} + 1\sqrt[2]{75} =$

$2\sqrt[2]{18} - 4 + 5\sqrt[2]{50} =$

$-7\sqrt[2]{20} - 5\sqrt[2]{45} =$

$8\sqrt[2]{44} + 3 + 6\sqrt[2]{99} - 1 =$

$7\sqrt[2]{28} + 3\sqrt[2]{63} - 2 =$

$5 + 4\sqrt[2]{20} + 1 - 5\sqrt[2]{125} + 6 =$

$2\sqrt[2]{12} + 1\sqrt[2]{20} + 1 =$

$2\sqrt[2]{28} + 1\sqrt[2]{20} + 2 =$

C11 - 5.2 - Multiplying Radicals HW

Multiply *the following radicals*

$7\sqrt{3} \times 2\sqrt{5} =$

$2\sqrt{7} \times 3\sqrt{6} =$

$10\sqrt{5x} \times 3\sqrt{7} =$

$x^3\sqrt{3x} \times x\sqrt{5x^5} =$

$7x\sqrt{3} \times 2x\sqrt{5} =$

$10\sqrt{5x} \times 3\sqrt{7} =$

$\sqrt{3} \times \sqrt{5} =$

$3 \times \sqrt{5} =$

$\sqrt{5} \times 3 =$

$\left(-4\sqrt{(-2)^2}\right)^2 =$

$\left(\sqrt{5}\right)^2 =$

$\left(-4\sqrt{2}\right)^2 =$

$\left(-3\sqrt{x+2}\right)^2 =$

$\left(2\sqrt{x-1}\right)^2 =$

$\left(\sqrt{x-1}\right)^2 =$

$\sqrt[3]{7} \times 2 =$

$7\sqrt[3]{3} \times 2\sqrt[3]{5} =$

$7x\sqrt[3]{3} \times 2x\sqrt[3]{5} =$

$7\sqrt{3} \times 2\sqrt[3]{5} =$

$\left(2\sqrt[3]{x-1}\right)^3 =$

$\left(3\sqrt[3]{2}\right)^2 =$

Multiply *the following radicals*

$7\sqrt{3} \times 2\sqrt{6} =$

$2\sqrt{8} \times 3\sqrt{6} =$

$10\sqrt{5x} \times 3\sqrt{7x} =$

$7x\sqrt{3} \times 2x\sqrt{9} =$

$2\sqrt{12x^2} \times 3\sqrt{6x} =$

$10\sqrt{14x} \times 3\sqrt{7} =$

$\left(\sqrt{5x}\right)^2 =$

$\left(3x\sqrt{2x}\right)^2 =$

$\left(-4\sqrt{2x^3}\right)^2 =$

$7\sqrt[3]{3} \times 2\sqrt[3]{27} =$

$7x\sqrt[3]{15} \times 2x\sqrt[3]{5} =$

$\sqrt[3]{8} \times 2 =$

C11 - 5.2 - Distribute/FOIL Radicals HW

Add or subtract the following radicals

$\sqrt{2}(\sqrt{5} + \sqrt{3}) =$

$2\sqrt{7}(3\sqrt{6} + \sqrt{2}) =$

$5(2\sqrt{7} + 4) =$

$\sqrt{7}(2 + \sqrt{3x}) =$

$\sqrt[3]{7}(2x^2 + \sqrt[3]{3}) =$

$\sqrt{5}(6 + \sqrt{5x}) =$

$(\sqrt{2} + \sqrt{5})(\sqrt{2} - \sqrt{5})$

$(\sqrt{7} + \sqrt{5})(\sqrt{7} - \sqrt{5})$

$(\sqrt{2x} + \sqrt{5})(\sqrt{2x} + \sqrt{5})$

$\left(\sqrt{7} + \sqrt{5x}\right)^2$

$(\sqrt{2} + \sqrt{7})(\sqrt{3} + \sqrt{5})$

$(\sqrt{2} + \sqrt{3})(\sqrt{6} + \sqrt{2})$

$(\sqrt{x+2} + 1)(\sqrt{x+2} - 1)$

$(\sqrt{x-3} + 1)(\sqrt{x-3} + 4)$

C11 - 5.2 - Dividing Radicals HW

Simplify or Divide the following radicals

$$\frac{\sqrt{10}}{\sqrt{5}} =$$

$$\frac{\sqrt{12}}{\sqrt{4}} =$$

$$\frac{\sqrt{1}}{\sqrt{4}} =$$

$$\frac{4\sqrt{6x^2}}{2\sqrt{3x}} =$$

$$\frac{8\sqrt{6x}}{4\sqrt{2x}} =$$

$$\frac{8\sqrt{10}}{3\sqrt{-2}} =$$

$$\frac{2\sqrt{3x}}{4\sqrt{6}} =$$

$$\frac{6x\sqrt{2}}{12x^2\sqrt{6}} =$$

$$\frac{3x^2\sqrt{5}}{7x\sqrt{6}} =$$

$$\frac{8\sqrt{18}}{4\sqrt{2}} =$$

$$\frac{6\sqrt{32}}{3\sqrt{2}} =$$

$$\frac{1\sqrt{45}}{6\sqrt{5}} =$$

$$\frac{6\sqrt{24}}{3\sqrt{3}} =$$

$$\frac{9\sqrt{7}}{\sqrt{63}} =$$

$$\frac{5\sqrt{12}}{6\sqrt{54}} =$$

Rationalize the Denominator by multiplying the top and the bottom by the roo1 on the bottom

$$\frac{1}{\sqrt{3}}$$

$$\frac{1}{\sqrt{2}}$$

$$\frac{1}{\sqrt{5}}$$

$$\frac{2}{\sqrt{2}}$$

$$\frac{6}{\sqrt{3}}$$

$$\frac{2}{\sqrt{5}}$$

$$\frac{1}{2\sqrt{3}}$$

$$\frac{2}{2\sqrt{2}}$$

$$\frac{12}{5\sqrt{6}}$$

$$\frac{3}{\sqrt{3}+1}$$

$$\frac{7}{\sqrt{6}+1}$$

$$\frac{25}{\sqrt{6}+1}$$

$$\frac{7}{\sqrt{6}+\sqrt{3})}$$

$$\frac{2+\sqrt{3}}{\sqrt{6}+1}$$

$$\frac{1}{\sqrt{2}+1}$$

C11 - 5.4 - Prep Radical Equations HW

Square the following

$\sqrt{x}$

$\sqrt{-x}$

$x + 2$

$x + 1$

$3\sqrt{x}$

$-\sqrt{x}$

$\dfrac{\sqrt{x}}{2}$

$\dfrac{\sqrt{2x}}{5}$

$\sqrt{x - 1}$

$\sqrt{x + 2}$

$2\sqrt{x + 2}$

$-2\sqrt{x + 2}$

$\sqrt{x} + \sqrt{5}$

$\sqrt{2x} + 7$

$\sqrt{x} - 2$

$3\sqrt{x} - 4$

$2 + \sqrt{x - 2}$

$8 + \sqrt{x - 7}$

$\sqrt{x + 2} + \sqrt{x - 1}$

$\sqrt{x - 1} + \sqrt{x - 1}$

C11 - 5.4 - Radical Equations HW

Solve the following equations by squaring both sides, possibly do algebra first.

$\sqrt{x} = 5$

$\sqrt{x} = 6$

$\sqrt{x} - 2 = 6$

$\sqrt{x} + 8 = 6$

$\sqrt{x} = -4$

$\sqrt{x + 2} = 5$

$\sqrt{x - 1} = -5$

$\sqrt{x + 3} - 2 = 5$

$\sqrt{x} - 8 = -6$

$\sqrt{2x + 3} = 5$

$\sqrt{3x - 5} = 4$

C11 - 5.4 - Radical Equations HW

Solve the following equations by squaring both sides, possibly do algebra first.

$\sqrt{2x} = \sqrt{x+4}$

$\sqrt{x} = \sqrt{6-x}$

$2\sqrt{2x} = \sqrt{2x+3}$

$\sqrt{2x-5} = \sqrt{x-1}$

$\sqrt{x+5} = \sqrt{2x+4}$

$\sqrt{4x-6} = \sqrt{2x+4}$

$2\sqrt{x+4} = 4$

$3\sqrt{x+2} - 3 = 9$

$-5\sqrt{x-1} = 10$

C11 - 5.4 - Radical Equations HW

Solve the following equations by squaring both sides, possibly do algebra first.

$2\sqrt{x-2} = \sqrt{x+1}$

$2\sqrt{x-5} = \sqrt{x+7}$

$2\sqrt{7x-6} = 3\sqrt{2x-8}$

$x = \sqrt{x+2}$

$x = \sqrt{2x+3}$

$x = \sqrt{4x-5}$

$2x = \sqrt{7x-3}$

$2x = \sqrt{-2x+1}$

C11 - 5.4 - Radical Equations HW

Solve the following equations by squaring both sides, possibly do algebra first.

$$\sqrt{x+3} = x + 1$$

$$\sqrt{2x+1} = 7 - x$$

$$\sqrt{x+3} - 1 = x$$

$$\sqrt{x+4} + 2 = x$$

C11 - 5.4 - Radical Equations HW

Solve the following equations by squaring both sides, possibly twice. Isolate a root 1st.

$$\sqrt{x-3} = \sqrt{x+2} - 1$$

$$\sqrt{x+11} - \sqrt{x-4} = 3$$

$$\sqrt{x+35} = \sqrt{x+15} + \sqrt{x+3}$$

6=4+2

$$x = 1$$

C11 - 5.4 - Restrictions HW

Find the Restriction, by setting underneath the root ≥ 0 and solve

$\sqrt{x-1}$

$\sqrt{x+2}$

$\sqrt{2x-3}$

$\sqrt{4x+1}$

$\sqrt{-x-1}$

$\sqrt{3-x}$

$\sqrt{-2x-3}$

$\sqrt{1-4x}$

$\sqrt{x^2-1}$

$\sqrt{4-x^2}$

$\sqrt{x^2+1}$

$\sqrt{x^2+4}$

$\sqrt{(x+1)(x-1)}$

$\sqrt{(x+2)(x-3)}$

$\sqrt{x^2+5x-6}$

$\sqrt{x^2-2x-3}$

C11 - 6.1 - Simplifying Rationals WS

Simplify.

$$\frac{12x^3}{3x} =$$

$$\frac{2x + 6}{x + 3} =$$

$$\frac{x^2 + 5x + 6}{x + 2} =$$

$$\frac{x^2 - 4}{x + 2} =$$

$$\frac{x + 7}{x + 7} =$$

$$\frac{x - 2}{x^2 + 2x - 8} =$$

$$\frac{x + 3}{x^2 - 9} =$$

$$\frac{2(x + 5)}{5 + x} =$$

$$\frac{x^2 - 6x + 8}{x + 3} =$$

$$\frac{2x^2 + 5x + 3}{x + 1} =$$

$$\frac{2x^2 - 7x - 4}{2x + 4}$$

$$\frac{x - 5}{5 - x} =$$

$$\frac{x^2 - 4}{4 - x^2} =$$

$$\frac{2x - 2}{1 - x} =$$

$$\frac{x^2 + 5x - 6}{-x^2 - 5x + 6}$$

$$\frac{(x - 1)(x + 1)}{(1 - x)(-x - 1)} =$$

$$\frac{3 - x}{x + 3} =$$

$$\frac{x + 2}{-2 + x} =$$

C11 - 6.2 - Restrictions Rationals WS

Determine the undefined values for x.

$$\frac{2}{x}$$

$$\frac{3}{x-1}$$

$$\frac{4}{x}$$

$$\frac{2}{x-2}$$

$$\frac{x}{2}$$

$$\frac{8}{5x}$$

$$x \neq 0$$

$$x - 1 \neq 0$$
$$x \neq 1$$

$$\frac{4}{2x+6}$$

$$\frac{x+2}{2x-4}$$

$$\frac{6x^2}{12x^3}$$

$$\frac{5}{2-x}$$

$$\frac{3}{x^2}$$

$$\frac{7}{(x-1)(x+2)}$$

$$\frac{x}{(x+4)(x-3)}$$

$$\frac{9}{(x-1)(x+1)}$$

$$\frac{4}{(x+2)^2}$$

$$\frac{5}{x^2+5x+6}$$

$$\frac{3x+2}{x^2+9x-10}$$

$$\frac{4}{2x^2-3x-5}$$

$$\frac{9}{x^2+10x+25}$$

$$\frac{1}{x^2-1}$$

$$\frac{3}{x^2-9}$$

$$\frac{2x}{x^2-1}$$

$$\frac{7x}{4-x^2}$$

$$\frac{8}{x^2}$$

$$\frac{6}{x^2+4}$$

C11 - 6.3 - Multiplying Rationals WS

Multiply, Simplify and State Restrictions. Leave answer in factored form.

$\dfrac{3}{4} \times \dfrac{1}{2} =$
$\dfrac{3 \times 1}{4 \times 2} = \dfrac{3}{8}$

$\dfrac{3}{4x} \times \dfrac{1}{2} =$

$\dfrac{3x^3}{2} \times \dfrac{4}{x^2} =$

$\dfrac{2}{5x} \times \dfrac{3x}{4} =$

$\dfrac{1}{x + 2} \times (x + 2) =$

$\dfrac{1}{x + 3} \times (x + 2)(x + 3) =$

$\dfrac{1}{(x + 2)(x + 3)} \times (x + 2) =$

$\dfrac{x + 2}{x + 1} \times \dfrac{3}{x + 2} =$

$\dfrac{2(x + 2)}{3} \times \dfrac{6}{x + 2} =$

$\dfrac{2x + 4}{x + 1} \times \dfrac{3}{x + 2} =$

$\dfrac{3}{(x - 1)} \times \dfrac{2}{(x + 2)} =$

$\dfrac{x + 1}{5} \times \dfrac{3}{(x + 1)(x - 2)} =$

$\dfrac{4}{x^2 + 5x + 6} \times \dfrac{x + 3}{9} =$

$\dfrac{x^2 - 64}{4} \times \dfrac{2}{x + 8} =$

$\dfrac{4}{x^2 - x - 6} \times \dfrac{x^2 + 5x + 6}{3} =$

$(x - 5)(x^2 - 1) \times \dfrac{1}{x^2 - 6x + 5} =$

$\dfrac{5}{x - 5} \times (5 - x) =$

$\dfrac{2x^2 - x - 6}{x + 3} \times \dfrac{x^2 - 9}{x^2 - 4} \times$

C11 - 6.3 - Dividing Rationals WS

Divide, Simplify and State Restrictions. Leave answer in factored form.

$$\frac{x}{3} \div \frac{5}{2} =$$

$$\frac{x}{7} \div \frac{9}{2x^3} =$$

$$\frac{x}{2} \div \frac{2x^2 - 4x}{x + 3} =$$

$$\frac{3}{x^2 - 1} \div \frac{5}{x - 1} =$$

$$\frac{1}{x^2 + x} \div \frac{5}{x + 1} =$$

$$\frac{x^2 + 5x + 6}{7} \div \frac{(x + 2)}{4} =$$

$$\frac{3x^2 - 3}{5} \div \frac{6x + 6}{7}$$

$$\frac{2x^2 + 10x + 12}{5} \div \frac{2x + 6}{5} =$$

$$\frac{x}{6} \div \frac{x(x + 1)}{2} =$$

$$\frac{2x^2 - x - 6}{x + 2} \div \frac{x^2 - 4}{x^2 + 5x + 6}$$

C11 - 6.4 - Adding Subtracting Rationals WS

Simplify

$\dfrac{2}{5} + \dfrac{1}{5} =$

$\dfrac{1}{2} + \dfrac{1}{3} =$

$\dfrac{1}{3} + \dfrac{1}{6} =$

$\dfrac{1}{x} + \dfrac{2}{x} =$

$\dfrac{x}{2} + \dfrac{x}{3} =$

$\dfrac{1}{2} + \dfrac{1}{2 \times 3} =$

$\dfrac{10x}{5} - \dfrac{3x}{5} =$

$\dfrac{5x}{4} - \dfrac{3x+2}{4} =$

$\dfrac{1}{3x} + \dfrac{3}{4x} =$

$\dfrac{1}{a} + \dfrac{1}{b} =$

$\dfrac{1}{a} + \dfrac{1}{ab} =$

$\dfrac{1}{ab} + \dfrac{1}{abc} =$

$\dfrac{1}{ab} + \dfrac{1}{ac} =$

$\dfrac{1}{a} + \dfrac{1}{a^2} =$

$\dfrac{1}{a^2} + \dfrac{1}{ab} =$

$\dfrac{1}{a} + \dfrac{1}{a+2} =$

$\dfrac{1}{6x^2} + \dfrac{2}{3x} =$

$\dfrac{1}{6x} + \dfrac{2}{4x} =$

$\dfrac{x}{2} + \dfrac{1}{4x+6} =$

$\dfrac{x}{3} + \dfrac{1}{3(x+2)} =$

$\dfrac{x}{3} + \dfrac{1}{3x+6} =$

$\dfrac{1}{2(x-2)} - \dfrac{1}{2} =$

C11 - 6.4 - Adding Subtracting Rationals WS

Simplify

$$\frac{x}{x+1} + \frac{3}{x+1} =$$

$$\frac{x}{x-2} + \frac{3}{x-2} =$$

$$\frac{4x}{x+1} + \frac{4}{x+1} =$$

$$\frac{x}{x-3} - \frac{x+2}{x-3} =$$

$$\frac{1}{(x-3)(x+2)} - \frac{5}{x+2} =$$

$$\frac{x}{x-2} - \frac{3}{x} =$$

$$\frac{1}{x-2} - \frac{1}{2-x} =$$

$$\frac{2}{x} + \frac{5}{x+1} =$$

$$\frac{1}{x^2+5x+6} + \frac{1}{x+2} =$$

$$\frac{9}{x^2-9} - \frac{4}{x-3} =$$

$$\frac{2}{x^2-1} - \frac{1}{x^2+2x+1} =$$

$$\frac{x+3}{x^2-x-6} + \frac{3x+9}{x^2-4} =$$

C11 - 6.4 - Bedmas Complex Fractions Rationals WS

Simplify

$$\frac{x}{3} \div \frac{5}{2} =$$

$$\frac{\frac{x}{3}}{\frac{5}{2}} =$$

$$x \div \frac{2}{3} =$$

$$\frac{\frac{x}{2}}{3} =$$

$$\frac{x}{2} \div 3 =$$

$$\frac{\frac{x}{3}}{3}$$

$$\frac{\frac{1}{x} - 3}{\frac{4}{x} + 1} =$$

$$\frac{\frac{1}{x-2} - 3}{\frac{2}{x-2} + 4} =$$

$$\frac{\frac{1}{x} + \frac{5}{x}}{\frac{1}{x} + \frac{2}{x}} =$$

$$\frac{1 + \frac{1}{x}}{x - \frac{1}{x}} =$$

C11 - 6.5 - Rational Equations HW

Solve

$$\frac{1}{3} + \frac{1}{x} = \frac{1}{2}$$

$$\frac{1}{6} + \frac{1}{x} = \frac{1}{4}$$

$$\frac{x}{3} - \frac{2x+4}{2} = \frac{3}{4} + \frac{2x}{6}$$

$$\frac{20}{t} - 3 = \frac{8}{t} + 3$$

$$\frac{x}{2} + \frac{3}{x} = \frac{5}{2}$$

$$\frac{1}{x} + \frac{1}{(x+1)} = \frac{5}{6}$$

$$\frac{2-x}{3x} + \frac{1}{2} = \frac{1}{4x}$$

$$\frac{3x+4}{x+2} + \frac{1}{2} = \frac{5}{2x+4}$$

$$600 - t = \frac{990}{3.\overline{3} - t}$$

$$\frac{x+3}{2} - \frac{x-5}{3} = 4$$

C11 - 6.5 - Rational Equations HW

Solve

$$\frac{3x}{x^2 - 4} - \frac{12}{x + 2} = -1$$

$$\frac{2}{x - 3} = \frac{x}{x^2 - 9} - \frac{11}{16}$$

$$\frac{x}{x + 4} = \frac{2 - x}{x^2 + 3x - 4} + \frac{1}{x - 1}$$

$$\frac{10}{x + 5} - \frac{6}{x - 3} = \frac{12}{x^2 + 2x - 15}$$

$$\frac{12}{x - 3} - \frac{1}{x - 6} = \frac{8}{x^2 - 9x + 18}$$

$$\frac{2}{x - 3} = \frac{x + 3}{x^2 - 9} - 1$$

C11 - 6.6 -Hoses filling Pool

Two hoses together fill a pool in 4 hours. If only hose A is used, the pool fills in 6 hours. How long would it take to fill the pool if only hose B were used?

Two hoses together fill a pool in 8 hours. If only hose A is used, the pool fills in 12 hours. How long would it take to fill the pool if only hose B were used?

C11 - 6.7 - Sum of Recips of Two Consecutive Ints HW

The sum of the reciprocals of two consecutive integers is $\frac{13}{42}$. What are the integers?

The sum of the reciprocals of two consecutive odd integers is $\frac{8}{15}$. What are the integers?

The sum of the reciprocals of three consecutive integers is 11/6. What are the integers?

C11 - 6.8 - Rationals Word Problems: Canoe Table

Mary paddles down river 40km with a current of 6km/h. It takes her the same time to paddle up river 16km. What is the speed of the boat?

	Speed	Distance	Time
Down-river	$v_b + 6$	40	t
Up-river	$v_b - 6$	16	t

$v_c = 6$

Down-river

40

t

Up-river

16

t

C11 - 6.1 - Simplifying Rationals WS

Simplify.

$$\frac{12x^3}{3x} =$$

$$\frac{2x + 6}{x + 3} =$$

$$\frac{x^2 + 5x + 6}{x + 2} =$$

$$\frac{x^2 - 4}{x + 2} =$$

$$\frac{x + 7}{x + 7} =$$

$$\frac{x - 2}{x^2 + 2x - 8} =$$

$$\frac{x + 3}{x^2 - 9} =$$

$$\frac{2(x + 5)}{5 + x} =$$

$$\frac{x^2 - 6x + 8}{x + 3} =$$

$$\frac{2x^2 + 5x + 3}{x + 1} =$$

$$\frac{2x^2 - 7x - 4}{2x + 4}$$

$$\frac{x - 5}{5 - x} =$$

$$\frac{x^2 - 4}{4 - x^2} =$$

$$\frac{2x - 2}{1 - x} =$$

$$\frac{x^2 + 5x - 6}{-x^2 - 5x + 6}$$

$$\frac{(x - 1)(x + 1)}{(1 - x)(-x - 1)} =$$

$$\frac{3 - x}{x + 3} =$$

$$\frac{x + 2}{-2 + x} =$$

C11 - 6.2 - Restrictions Rationals WS

Determine the undefined values for x.

$$\frac{2}{x}$$

$$\frac{3}{x-1}$$

$$\frac{4}{x}$$

$$\frac{2}{x-2}$$

$$\frac{x}{2}$$

$$\frac{8}{5x}$$

$$x \neq 0$$

$$x - 1 \neq 0$$
$$x \neq 1$$

$$\frac{4}{2x+6}$$

$$\frac{x+2}{2x-4}$$

$$\frac{6x^2}{12x^3}$$

$$\frac{5}{2-x}$$

$$\frac{3}{x^2}$$

$$\frac{7}{(x-1)(x+2)}$$

$$\frac{x}{(x+4)(x-3)}$$

$$\frac{9}{(x-1)(x+1)}$$

$$\frac{4}{(x+2)^2}$$

$$\frac{5}{x^2+5x+6}$$

$$\frac{3x+2}{x^2+9x-10}$$

$$\frac{4}{2x^2-3x-5}$$

$$\frac{9}{x^2+10x+25}$$

$$\frac{1}{x^2-1}$$

$$\frac{3}{x^2-9}$$

$$\frac{2x}{x^2-1}$$

$$\frac{7x}{4-x^2}$$

$$\frac{8}{x^2}$$

$$\frac{6}{x^2+4}$$

C11 - 6.3 - Multiplying Rationals WS

Multiply, Simplify and State Restrictions. Leave answer in factored form.

$\dfrac{3}{4} \times \dfrac{1}{2} =$
$\dfrac{3 \times 1}{4 \times 2} = \dfrac{3}{8}$

$\dfrac{3}{4x} \times \dfrac{1}{2} =$

$\dfrac{3x^3}{2} \times \dfrac{4}{x^2} =$

$\dfrac{2}{5x} \times \dfrac{3x}{4} =$

$\dfrac{1}{x+2} \times (x+2) =$

$\dfrac{1}{x+3} \times (x+2)(x+3) =$

$\dfrac{1}{(x+2)(x+3)} \times (x+2) =$

$\dfrac{x+2}{x+1} \times \dfrac{3}{x+2} =$

$\dfrac{2(x+2)}{3} \times \dfrac{6}{x+2} =$

$\dfrac{2x+4}{x+1} \times \dfrac{3}{x+2} =$

$\dfrac{3}{(x-1)} \times \dfrac{2}{(x+2)} =$

$\dfrac{x+1}{5} \times \dfrac{3}{(x+1)(x-2)} =$

$\dfrac{4}{x^2+5x+6} \times \dfrac{x+3}{9} =$

$\dfrac{x^2-64}{4} \times \dfrac{2}{x+8} =$

$\dfrac{4}{x^2-x-6} \times \dfrac{x^2+5x+6}{3} =$

$(x-5)(x^2-1) \times \dfrac{1}{x^2-6x+5} =$

$\dfrac{5}{x-5} \times (5-x) =$

$\dfrac{2x^2-x-6}{x+3} \times \dfrac{x^2-9}{x^2-4}$

C11 - 6.3 - Dividing Rationals WS

Divide, Simplify and State Restrictions. Leave answer in factored form.

$$\frac{x}{3} \div \frac{5}{2} =$$

$$\frac{x}{7} \div \frac{9}{2x^3} =$$

$$\frac{x}{2} \div \frac{2x^2 - 4x}{x + 3} =$$

$$\frac{3}{x^2 - 1} \div \frac{5}{x - 1} =$$

$$\frac{1}{x^2 + x} \div \frac{5}{x + 1} =$$

$$\frac{x^2 + 5x + 6}{7} \div \frac{(x + 2)}{4} =$$

$$\frac{3x^2 - 3}{5} \div \frac{6x + 6}{7}$$

$$\frac{2x^2 + 10x + 12}{5} \div \frac{2x + 6}{5} =$$

$$\frac{x}{6} \div \frac{x(x + 1)}{2} =$$

$$\frac{2x^2 - x - 6}{x + 2} \div \frac{x^2 - 4}{x^2 + 5x + 6}$$

C11 - 6.4 - Adding Subtracting Rationals WS

Simplify

$$\frac{2}{5} + \frac{1}{5} =$$

$$\frac{1}{2} + \frac{1}{3} =$$

$$\frac{1}{3} + \frac{1}{6} =$$

$$\frac{1}{x} + \frac{2}{x} =$$

$$\frac{x}{2} + \frac{x}{3} =$$

$$\frac{1}{2} + \frac{1}{2 \times 3} =$$

$$\frac{10x}{5} - \frac{3x}{5} =$$

$$\frac{5x}{4} - \frac{3x + 2}{4} =$$

$$\frac{1}{3x} + \frac{3}{4x} =$$

$$\frac{1}{a} + \frac{1}{b} =$$

$$\frac{1}{a} + \frac{1}{ab} =$$

$$\frac{1}{ab} + \frac{1}{abc} =$$

$$\frac{1}{ab} + \frac{1}{ac} =$$

$$\frac{1}{a} + \frac{1}{a^2} =$$

$$\frac{1}{a^2} + \frac{1}{ab} =$$

$$\frac{1}{a} + \frac{1}{a + 2} =$$

$$\frac{1}{6x^2} + \frac{2}{3x} =$$

$$\frac{1}{6x} + \frac{2}{4x} =$$

$$\frac{x}{2} + \frac{1}{4x + 6} =$$

$$\frac{x}{3} + \frac{1}{3(x + 2)} =$$

$$\frac{x}{3} + \frac{1}{3x + 6} =$$

$$\frac{1}{2(x - 2)} - \frac{1}{2} =$$

C11 - 6.4 - Adding Subtracting Rationals WS

Simplify

$$\frac{x}{x+1} + \frac{3}{x+1} =$$

$$\frac{x}{x-2} + \frac{3}{x-2} =$$

$$\frac{4x}{x+1} + \frac{4}{x+1} =$$

$$\frac{x}{x-3} - \frac{x+2}{x-3} =$$

$$\frac{1}{(x-3)(x+2)} - \frac{5}{x+2} =$$

$$\frac{x}{x-2} - \frac{3}{x} =$$

$$\frac{1}{x-2} - \frac{1}{2-x} =$$

$$\frac{2}{x} + \frac{5}{x+1} =$$

$$\frac{1}{x^2+5x+6} + \frac{1}{x+2} =$$

$$\frac{9}{x^2-9} - \frac{4}{x-3} =$$

$$\frac{2}{x^2-1} - \frac{1}{x^2+2x+1} =$$

$$\frac{x+3}{x^2-x-6} + \frac{3x+9}{x^2-4} =$$

Simplify

$$\frac{x}{3} \div \frac{5}{2} =$$

$$\frac{\frac{x}{3}}{\frac{5}{2}} =$$

$$x \div \frac{2}{3} =$$

$$\frac{\frac{x}{2}}{3} =$$

$$\frac{x}{2} \div 3 =$$

$$\frac{\frac{x}{3}}{3}$$

$$\frac{\frac{1}{x} - 3}{\frac{4}{x} + 1} =$$

$$\frac{\frac{1}{x-2} - 3}{\frac{2}{x-2} + 4} =$$

$$\frac{\frac{1}{x} + \frac{5}{x}}{\frac{1}{x} + \frac{2}{x}} =$$

$$\frac{1 + \frac{1}{x}}{x - \frac{1}{x}} =$$

C11 - 6.5 - Rational Equations HW

Solve

$$\frac{1}{3} + \frac{1}{x} = \frac{1}{2}$$

$$\frac{1}{6} + \frac{1}{x} = \frac{1}{4}$$

$$\frac{x}{3} - \frac{2x+4}{2} = \frac{3}{4} + \frac{2x}{6}$$

$$\frac{20}{t} - 3 = \frac{8}{t} + 3$$

$$\frac{x}{2} + \frac{3}{x} = \frac{5}{2}$$

$$\frac{1}{x} + \frac{1}{(x+1)} = \frac{5}{6}$$

$$\frac{2-x}{3x} + \frac{1}{2} = \frac{1}{4x}$$

$$\frac{3x+4}{x+2} + \frac{1}{2} = \frac{5}{2x+4}$$

$$600 - t = \frac{990}{3.\bar{3} - t}$$

$$\frac{x+3}{2} - \frac{x-5}{3} = 4$$

C11 - 6.5 - Rational Equations HW

Solve

$$\frac{3x}{x^2 - 4} - \frac{12}{x + 2} = -1$$

$$\frac{2}{x - 3} = \frac{x}{x^2 - 9} - \frac{11}{16}$$

$$\frac{x}{x + 4} = \frac{2 - x}{x^2 + 3x - 4} + \frac{1}{x - 1}$$

$$\frac{10}{x + 5} - \frac{6}{x - 3} = \frac{12}{x^2 + 2x - 15}$$

$$\frac{12}{x - 3} - \frac{1}{x - 6} = \frac{8}{x^2 - 9x + 18}$$

$$\frac{2}{x - 3} = \frac{x + 3}{x^2 - 9} - 1$$

C11 - 6.6 -Hoses filling Pool

Two hoses together fill a pool in 4 hours. If only hose A is used, the pool fills in 6 hours. How long would it take to fill the pool if only hose B were used?

Two hoses together fill a pool in 8 hours. If only hose A is used, the pool fills in 12 hours. How long would it take to fill the pool if only hose B were used?

The sum of the reciprocals of two consecutive integers is $\frac{13}{42}$. What are the integers?

The sum of the reciprocals of two consecutive odd integers is $\frac{8}{15}$. What are the integers?

The sum of the reciprocals of three consecutive integers is 11/6. What are the integers?

C11 - 6.8 - Rationals Word Problems: Canoe Table

Mary paddles down river 40km with a current of 6km/h. It takes her the same time to paddle up river 16km. What is the speed of the boat?

	Speed	Distance	Time
Down-river	$v_b + 6$	40	t
Up-river	$v_b - 6$	16	t

C11 - 7.1 - Absolute Value: $|x|$ HW

$|4| =$ $|-5| =$ $|2 - 5| =$ $|5| - |-7| =$

$-|7| =$ $-|-8| =$

Solve algebraically.

$|x| = 5$ $|x| = 8$ $|x| = -5$ $|x| = 2$

$|x - 4| = 6$ $|x - 3| = 7$

$|x + 4| = 9$ $|x + 5| = -9$

$|2x - 4| = 6$ $|99x - 0.034| = -5$

C11 - 7.2 - Linear Absolute Value: $y= \left| x \pm \# \right|$ Graphing TOV HW

Graph

$y = |x + 1|$

x	y
−2	
−1	
0	
1	
2	
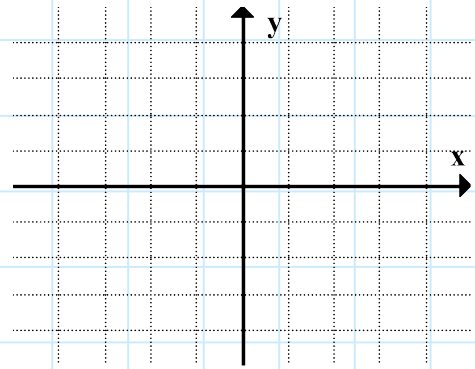
$y = |x - 2|$

x	y
−2	
−1	
0	
1	
2	
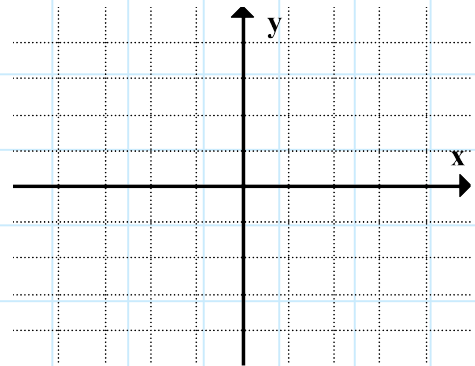
$y = |2x - 1|$

x	y
−2	
−1	
0	
1	
2	

$y = |-x - 3|$

x	y
−2	
−1	
0	
1	
2	

Graph and write a piecewise function

$y = |x - 1|$

x	y
−2	
−1	
0	
1	
2	
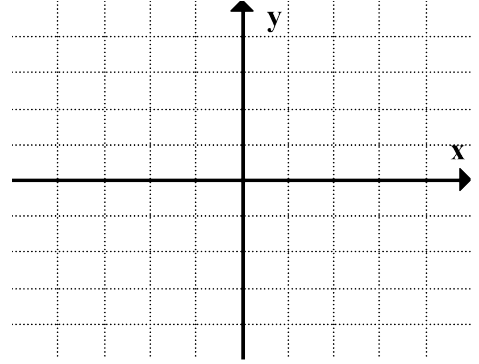
$y = |-x - 4|$

x	y
−2	
−1	
0	
1	
2	
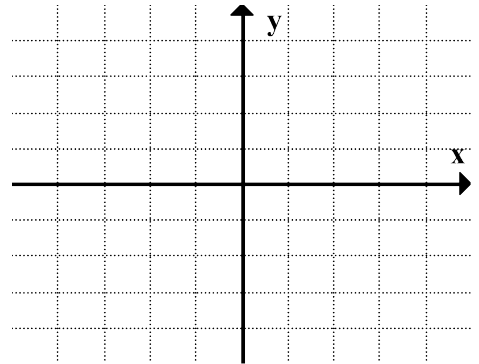
$y = |2x - 5|$

x	y
−2	
−1	
0	
1	
2	
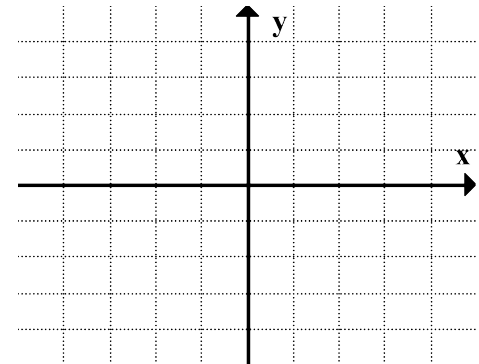
C11 - 7.3 - Linear Absolute Value Equations $|x| = c$ HW

Solve algebraically and graphically

$|x + 3| = 3$
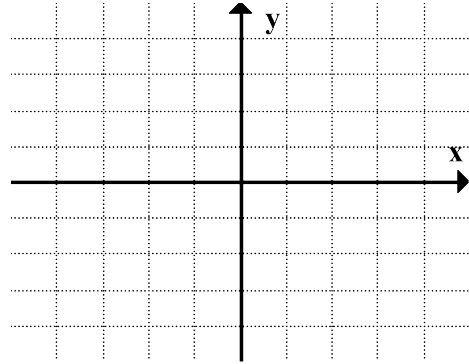
$|x - 3| = 2$
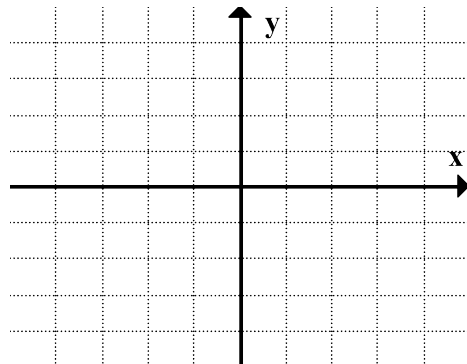
$|2x - 3| = 3$
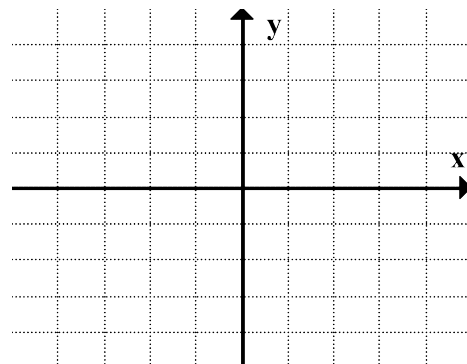
C11 - 7.4 - Quadratic Absolute Value: $y = \left| x \pm \# \right|$ Graph TOV HW

Graph

$y = |x^2 - 1|$

x	y
-2	
-1	
0	
1	
2	
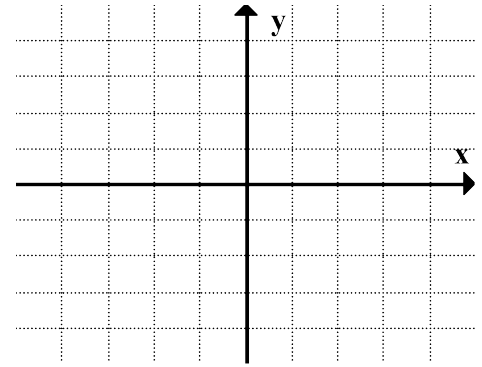
$y = |x^2 - 4|$

x	y
-2	
-1	
0	
1	
2	
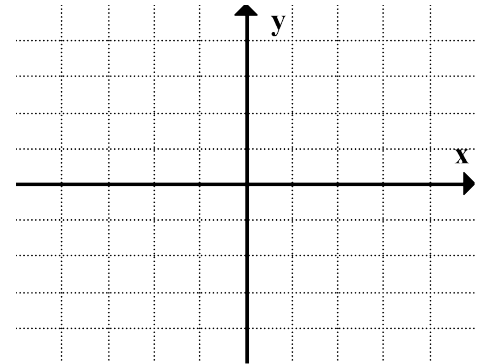
$y = |-x^2 + 1|$

x	y
-2	
-1	
0	
1	
2	
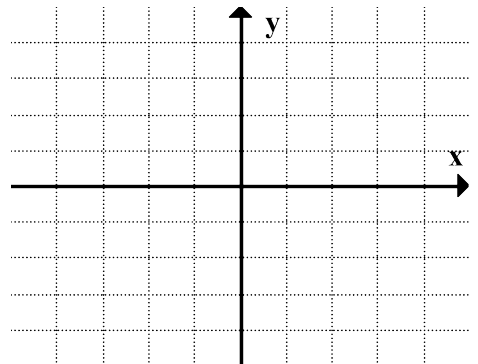
$y = |x^2 - 2x - 3|$

x	y
-2	
-1	
0	
1	
2	
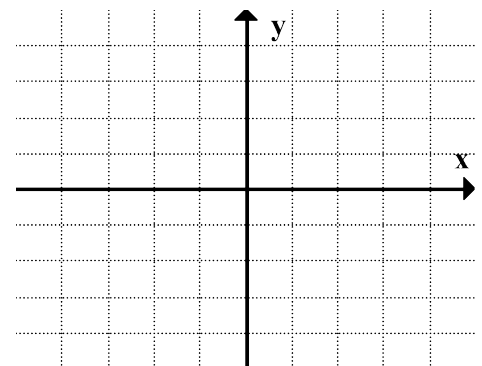
C11 - 7.4 - Quadratic Absolute Value: $y = |x \pm \#|$ $Grapg$ TOV HW

Graph and write a piecewise function

$y = |x^2 - 4|$

x	y
−2	
−1	
0	
1	
2	
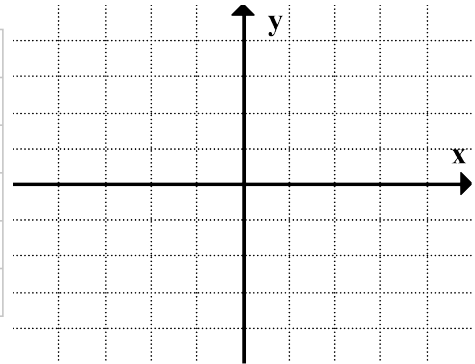
$y = |x^2 + 6x + 5|$

x	y
−2	
−1	
0	
1	
2	
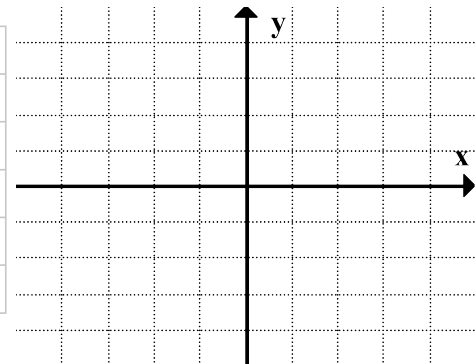
$y = |-x^2 + 4|$

x	y
−2	
−1	
0	
1	
2	
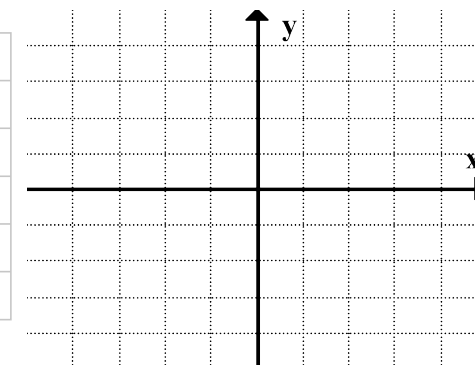
C11 - 7.5 - Quadratic Absolute Value Equations HW

Solve algebraically and graphically

$|x^2 - 1| = 3$
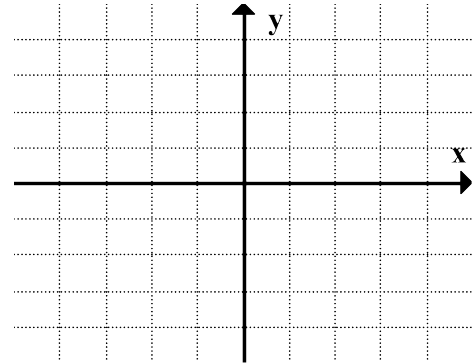
$x = \pm 2$

$|-x^2 + 1| = x + 1$
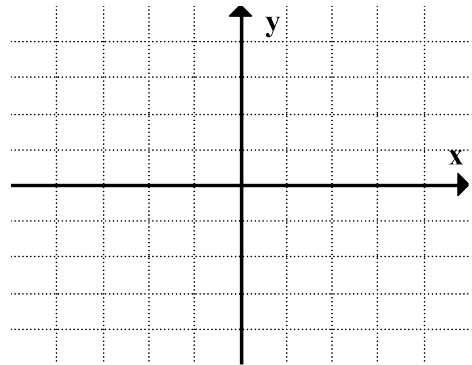
$x = -1, 0, 2$

$|x^2 - 2x - 3| = 6$
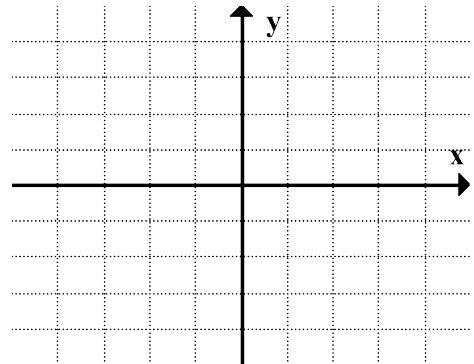
$x = -1, 3$

C11 - 7.5 - Quadratic Absolute Value Equations HW

Solve algebraically and graphically

$|x^2 - 5| = 4$
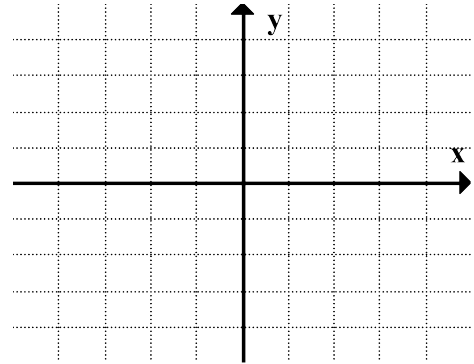
$x = \pm 1, \pm 3$

$|x^2 - 4| = x - 2$
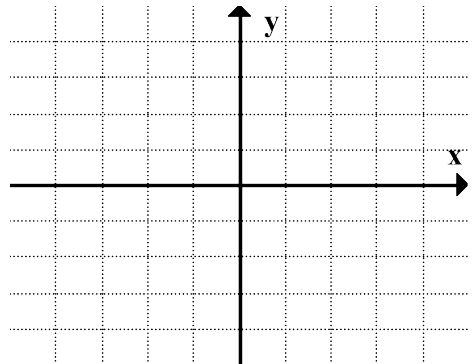
$x = 2$

$|x^2 - 1| = -1$
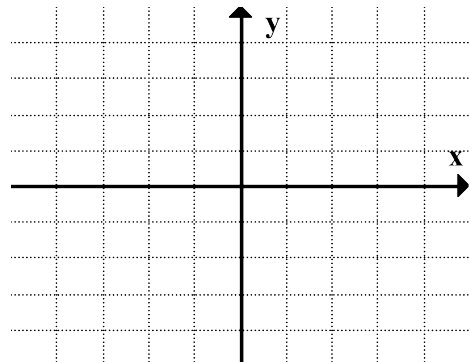
$\neq x$

$|x^2 + 5x - 7| = 3$ *Quadform*

C11 - 7.6 - Reciprocal Restrictions Notes

Find the restrictions

$\dfrac{1}{x-2}$

$\dfrac{1}{x^2+5x-6}$

$\dfrac{1}{x^2-4}$

$\dfrac{1}{x^2+1}$

$\dfrac{1}{(x+4)(3x-1)}$

$\dfrac{1}{(x+1)(x-1)}$

$\dfrac{1}{2x^2+2x}$

$\dfrac{1}{2x^2-7x-4}$

$\dfrac{1}{x^2+9}$

C11 - 7.7 - Linear Reciprocals HW

Graph the following and its reciprocal on the same graph, identify the equation of and draw a vertical asymptote, and label the invariant points

$y = x + 2$
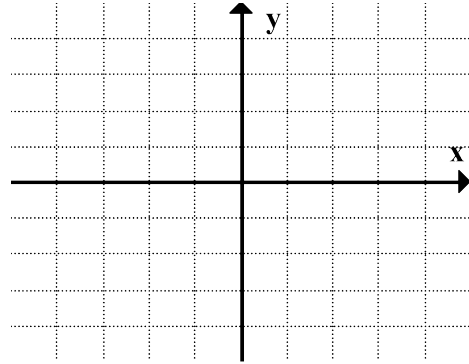
$y = x - 3$
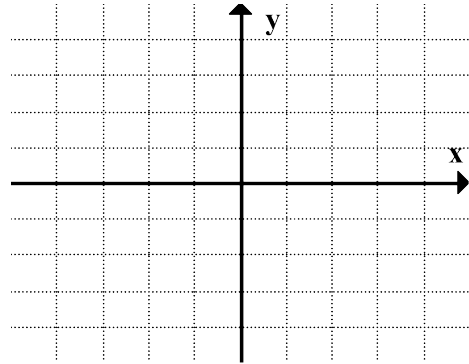
$y = 2x - 1$
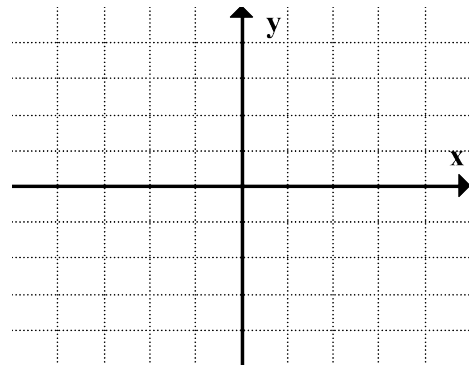
C11 - 7.8 - Quadratic Reciprocals WS

Graph the following and its reciprocal on the same graph, identify the equation of and draw a vertical asymptote, and label the invariant points

$y = x^2 - 4$
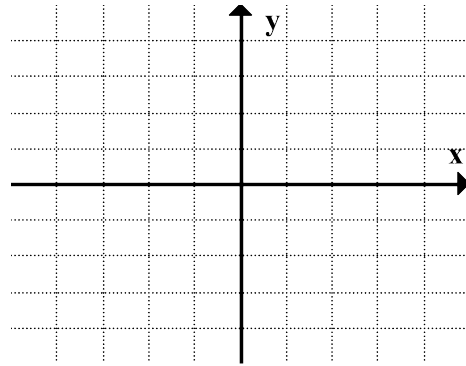
$y = x^2 - 2x - 3$
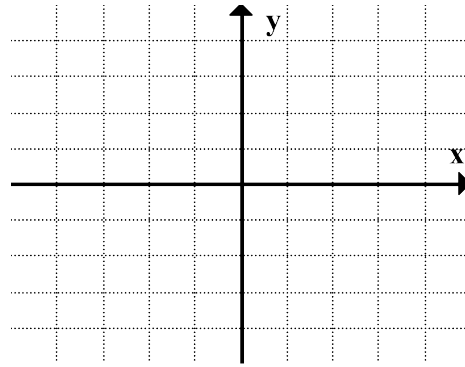
$y = x^2 + 5x + 4$
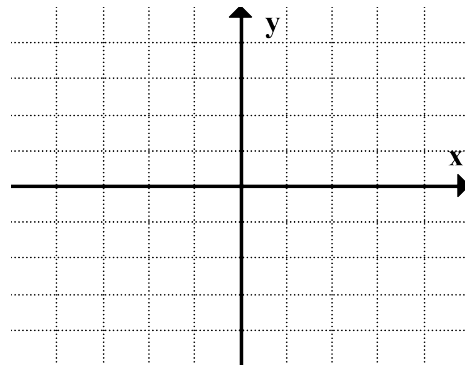
C11 - 8.2 - Intersections HW

Find the intersections by substitution and graph

$y = x + 4$ $y = x^2 + 2$
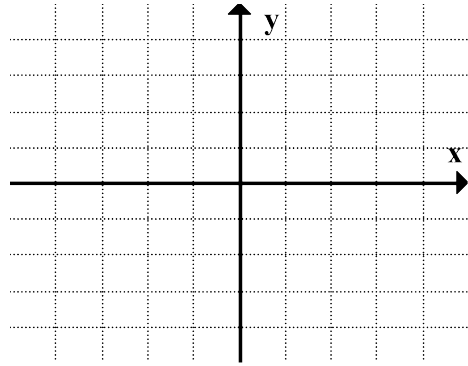
$y = x^2 - 1$ $y = -\dfrac{1}{4}x^2 + 4$
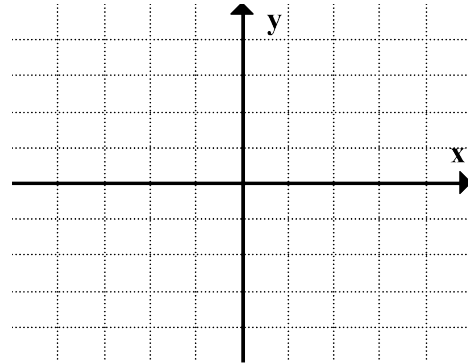
$y = x^2 - 2x - 3$ $y = -2(x - 1)^2 - 1$
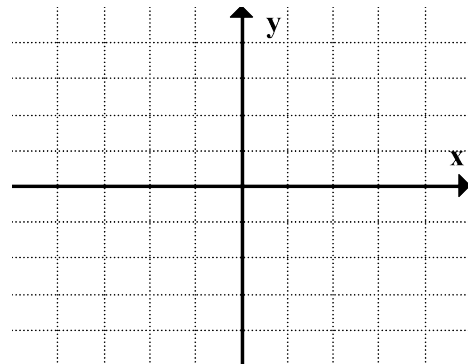
C11 - 8.3 - Intersections HW

Find the intersections by substitution and graph

$y = (x - 2)^2 + 1$ $y = -(x - 2)^2 + 1$
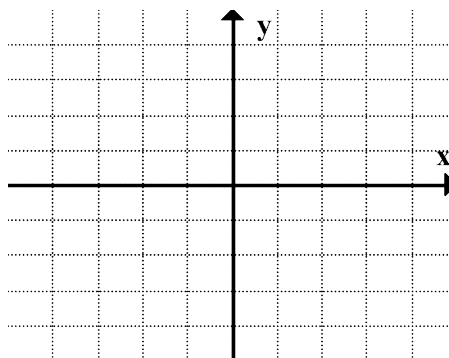
$y = 2x^2 + 1$ $y = 2x^2 - 2$
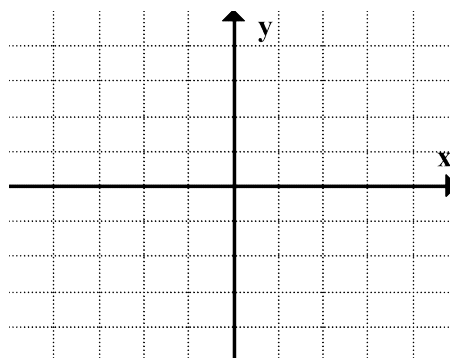
$y = x^2 + 1$ $y = -x^2 - 2$
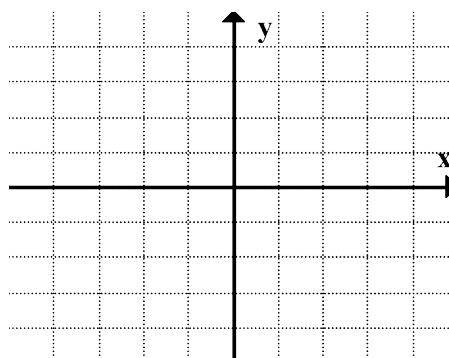
C11 - 9.1 - Linear Inequalities In Two Variables WS

Graph the following inequalities

$y \geq x - 1$
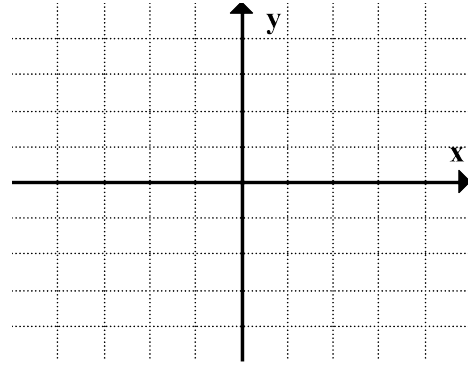
$y < x$
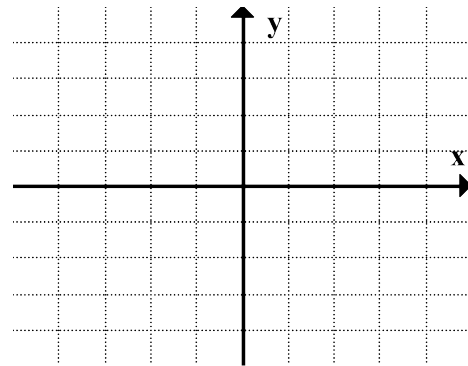
$y > -x + 4$
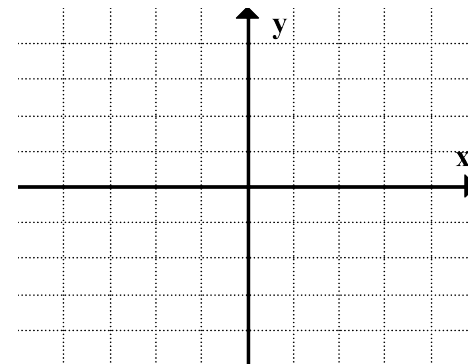
$y \leq 3x - 2$
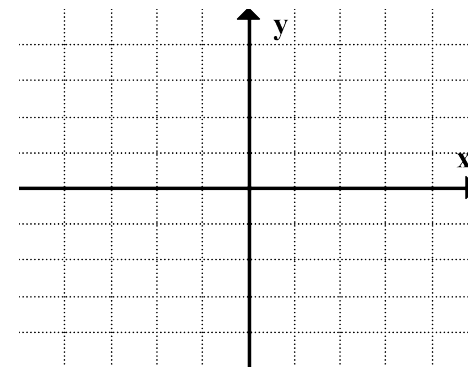
C11 - 9.2 - Linear Inequalities In One Variables WS
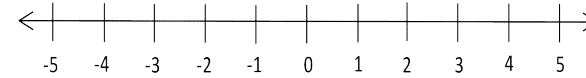
Graph the following inequalities

$x + 4 < 0$
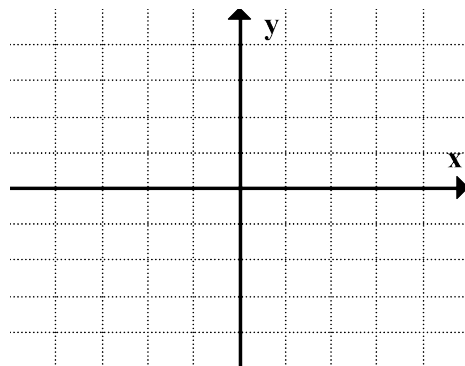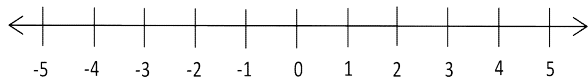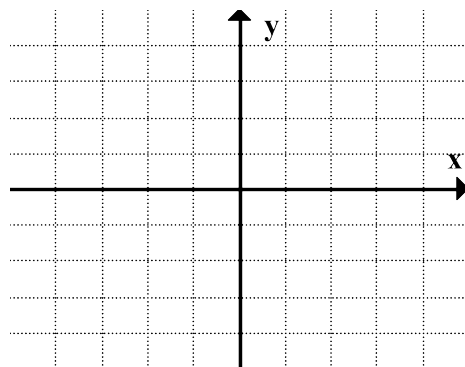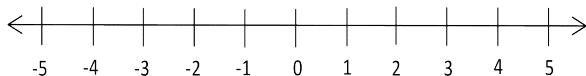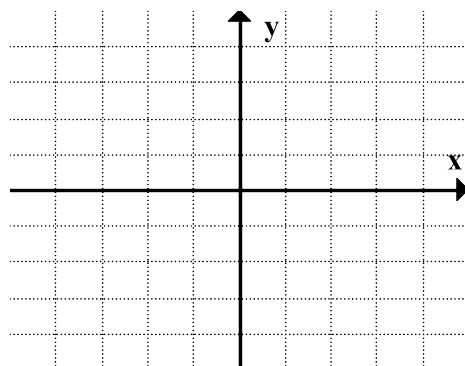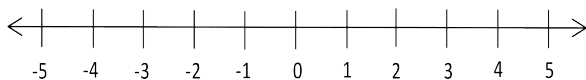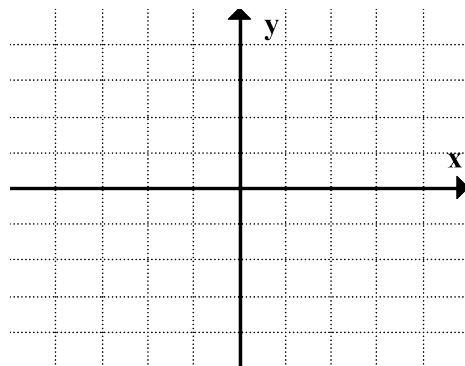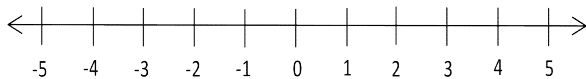
-5 -4 -3 -2 -1 0 1 2 3 4 5

$-x - 3 \geq 0$

-5 -4 -3 -2 -1 0 1 2 3 4 5

$x \leq 0$

-5 -4 -3 -2 -1 0 1 2 3 4 5

$2x - 1 > 0$

-5 -4 -3 -2 -1 0 1 2 3 4 5

C11 - 9.2 - Quadratic inequalities In One Variables WS

Graph the following inequalities

$x^2 - 4 > 0$

$$\begin{array}{c} \xleftarrow{\hspace{1cm}\rule{6cm}{0.4pt}\hspace{1cm}} \\ \text{-5 \quad -4 \quad -3 \quad -2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5} \end{array}$$

$x^2 - 4 < 0$

$$\text{-5 \quad -4 \quad -3 \quad -2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5}$$

$x^2 - 4x + 3 \geq 0$

$$\text{-5 \quad -4 \quad -3 \quad -2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5}$$

$x^2 - 4x + 3 \leq 0$

$$\text{-5 \quad -4 \quad -3 \quad -2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5}$$
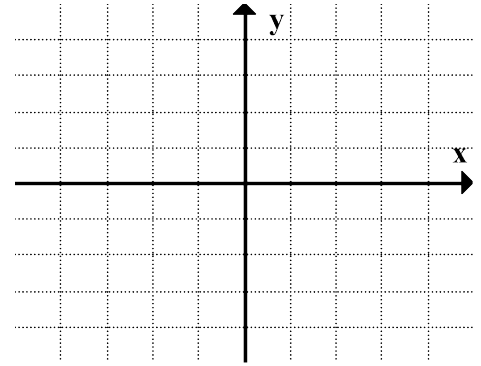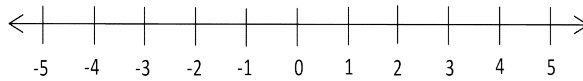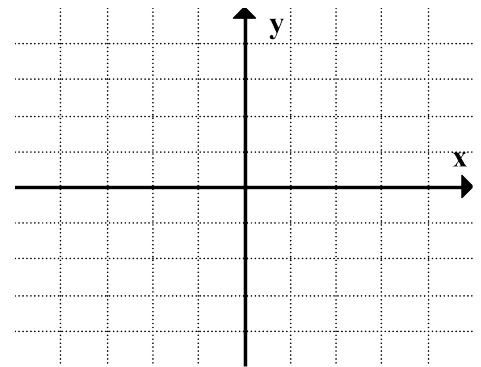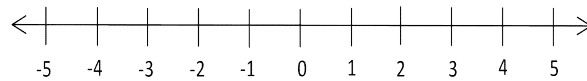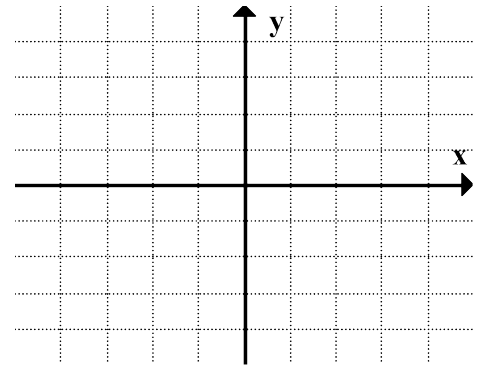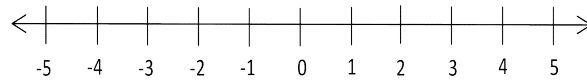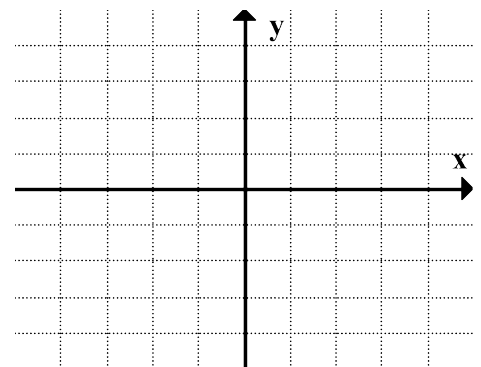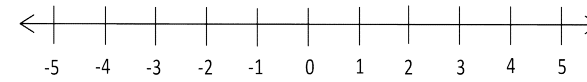
C11 - 9.2 - Quadratic Inequalities In One Variables WS

Graph the following inequalities

$x^2 + x - 6 < 0$
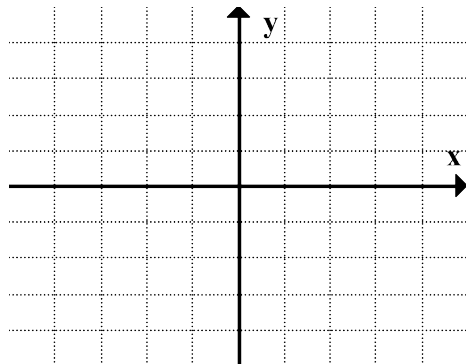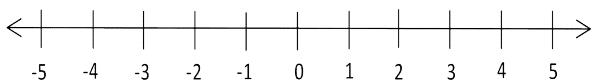
$(x + 3)(x - 1) \geq 0$
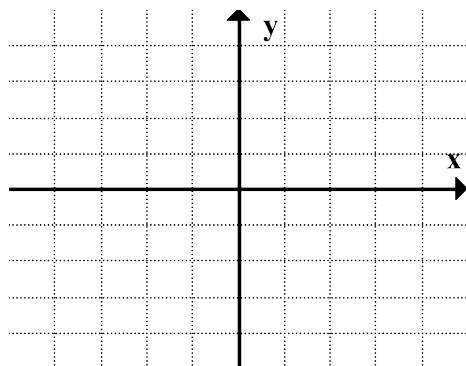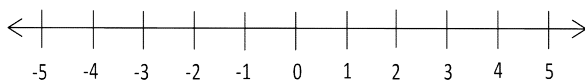
$2x^2 + 5x - 3 > 0$
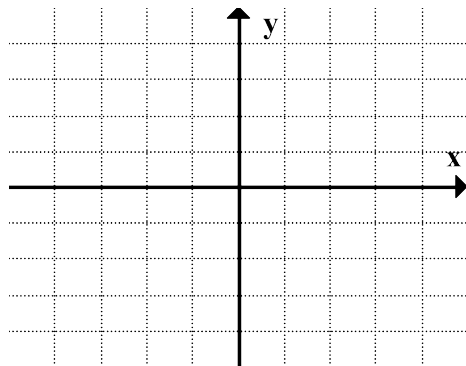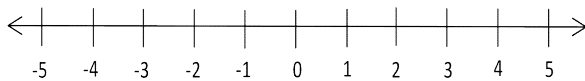
$(2x + 1)(x - 3) \leq 0$
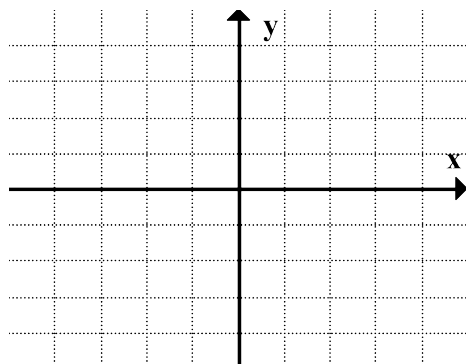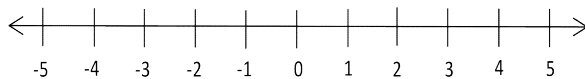
C11 - 9.2 - Quadratic Inequalities In One Variables WS

Graph the following inequalities

$(x-2)^2 < 0$
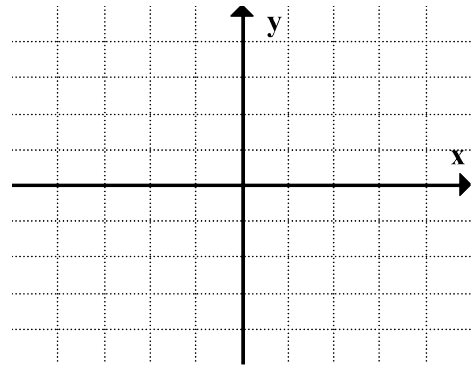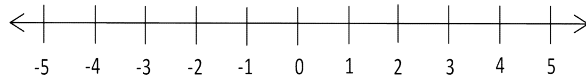
$(x-2)^2 \geq 0$
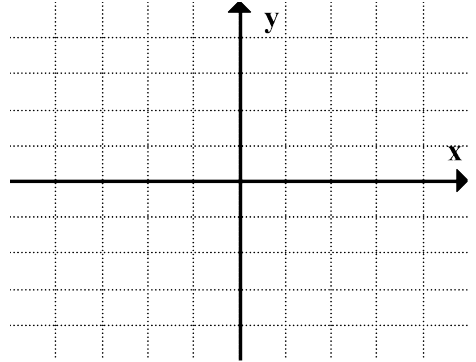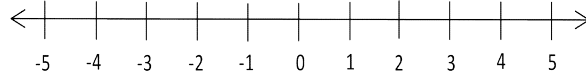
$(x-2)^2 > 0$

$(x-2)^2 \leq 0$

C11 - 9.2 - Quadratic Inequalities In One Variables WS

Graph the following inequalities

$(x - 2)^2 + 1 < 0$

$(x - 2)^2 + 1 \geq 0$

$(x - 2)^2 + 1 > 0$

$(x - 2)^2 + 1 \leq 0$

C11 - 9.3 - Quadratic Inequalities In Two Variables WS
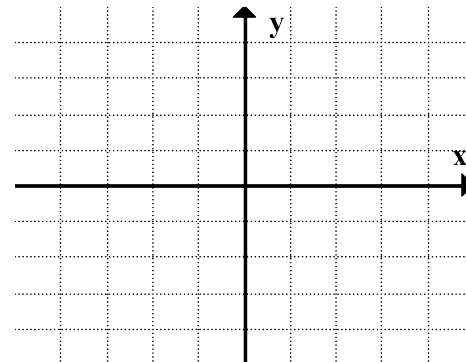
Graph the following inequalities
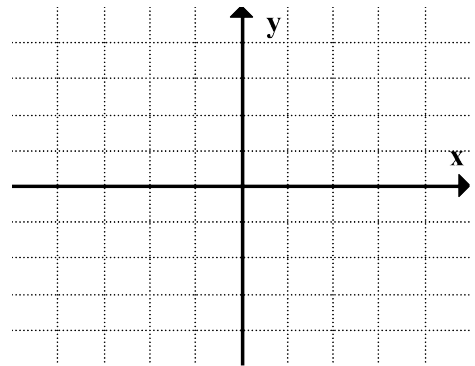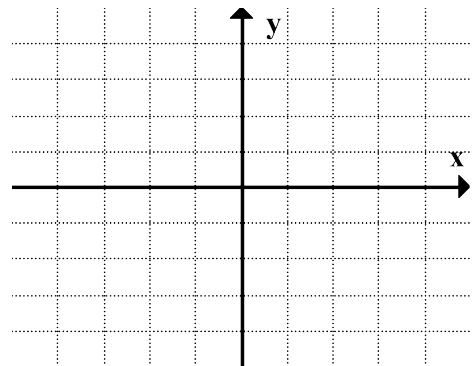
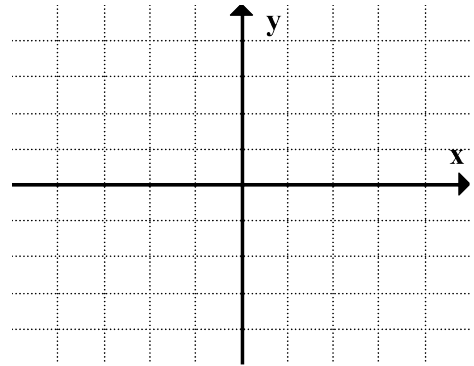$y \geq (x - 1)^2 - 4$

$y > x^2 + 4$
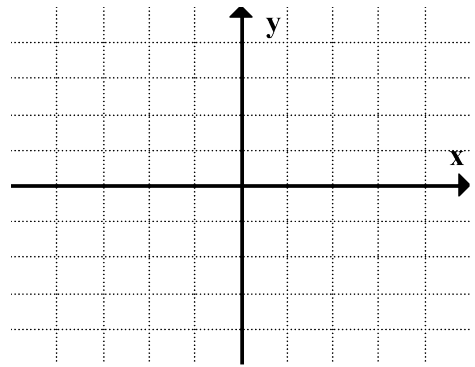
$y \leq -2x^2 + 2$

$y < (x - 1)^2 - 1$

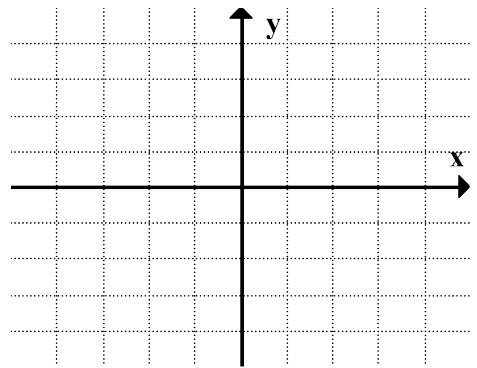# C11 - 9.3 - Quadratic Inequalities In Two Variables WS
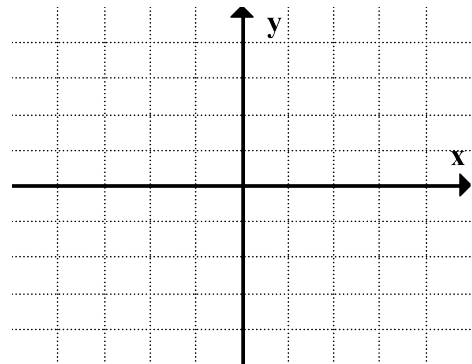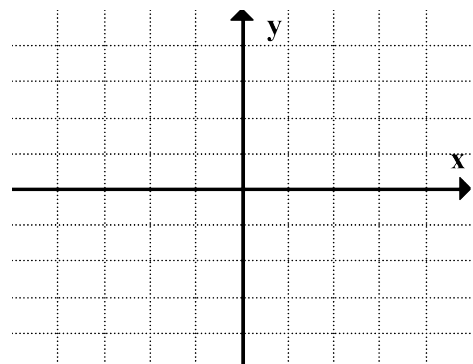
Graph the following inequalities

$y \geq x^2 - 1$

$y \leq x^2 + x - 2$

$y > -x^2 + 4$

$y < 2x^2 - x - 1$

C11 - 9.4 - Word Problems

Find the range of dimensions of a rectangle with an area less than 15 m² that has a length two meters more than it's width.

Find the range of dimensions of a rectangle with an area of at least 6 m² that has a length one meter longer than twice it's width.

The End