C12 - 3.1 - Long Division WS

Divide using long division and state the division statement and the multiplication statement. Find Remainder.

$3\overline{)\,36}$

$3\overline{)\,35}$

$(x-2)\overline{)\,x^2+2x-8}$

$(x-3)\overline{)\,x^2+4x-22}$

$(x-3)\overline{)\,x^3-2x^2-5x+6}$ Fully Factor

$(x+2)\overline{)\,3x^2+5x-2}$

$(x+4)\overline{)\,2x^2+9x-1}$

$(x+5)\overline{)\,x^2+9x+20}$

C12 - 3.1 - Synthetic Division WS

Divide using synthetic division and state the division statement and the multiplication statement. Fully Factor.

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

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

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

$$\frac{x^3 + 2x^2 - 4x - 8}{x + 2} \qquad \frac{x^3 + x^2 - 4x - 4}{x - 2} \qquad \frac{x^3 + 6x^2 + 8}{x + 3} \qquad \frac{x^3 - 2x^2 - 5x + 8}{(x - 3)}$$

C12 - 3.2 - Factor/Remainder Theorem Synthetic Long Division WS

Is the following a factor of the polynomial. Test by Inspection. Factor using synthetic or long division.

$(x-1)$ x^3-2x^2-5x+6

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

$(x+2)$ x^3-2x^2-5x+6

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

$(x-2)$ x^3+2x^2-4x-8

$(x+3)$ $x^3+6x^2+12x+8$

$(x-2)$ x^3-2x^2-5x+7

$(x+1)$ x^3+x^2-4x-1

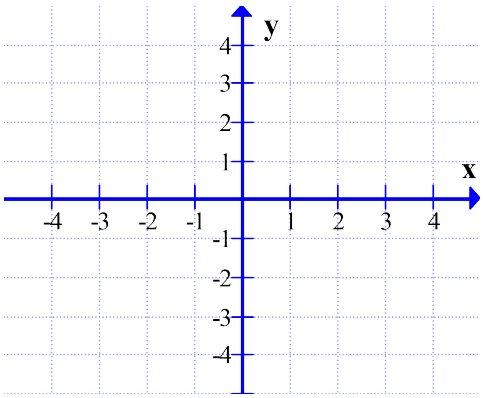
$(x-3)$ x^3-2x^2-5x-2

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

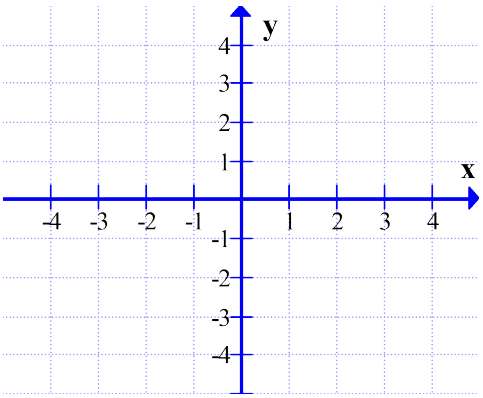
C12 - 3.3 - Factoring WS

Factor and state the x and y-intercepts and draw a graph

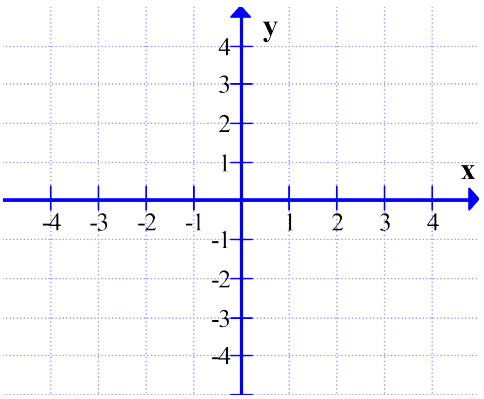
$x^2 - 4x + 3$



$x^3 - 2x^2 - 5x + 6$



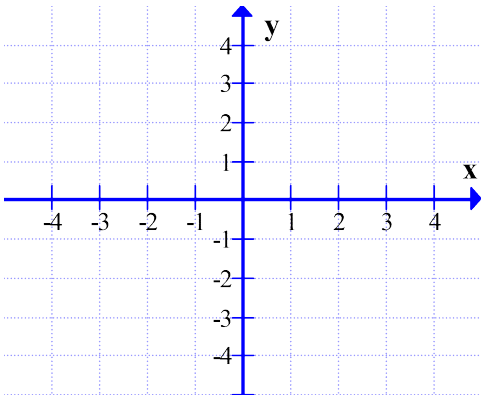
$-x^3 - 2x^2 + 5x + 6$



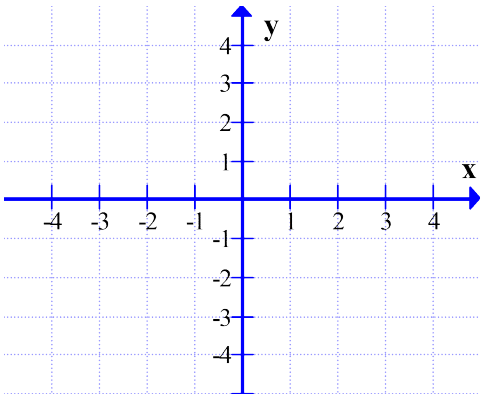
C12 - 3.3 - Factoring WS

Factor and state the x and y-intercepts and draw a graph

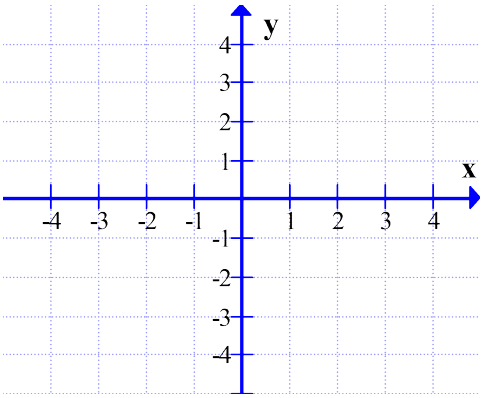
$x^3 + 2x^2 - 4x - 8$



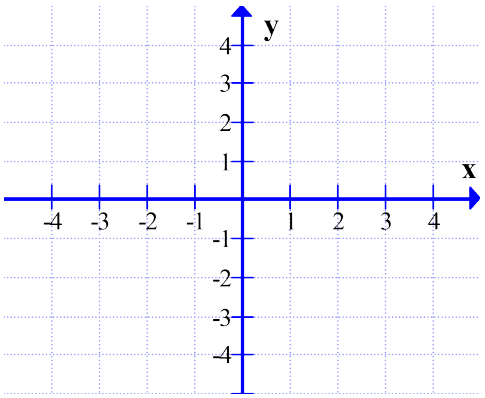
$x^4 - 2x^3 + 2x - 1$



$x^3 - 3x + 2$



$-x^3 + 3x^2$

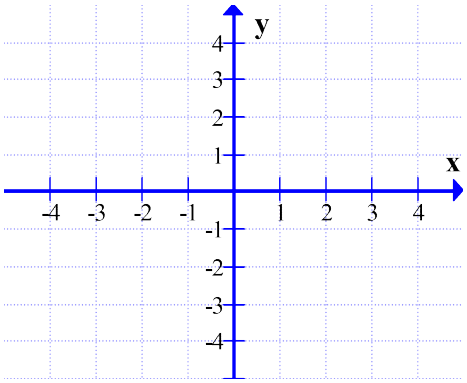


C12 - 3.4 - Graph Factored Form WS

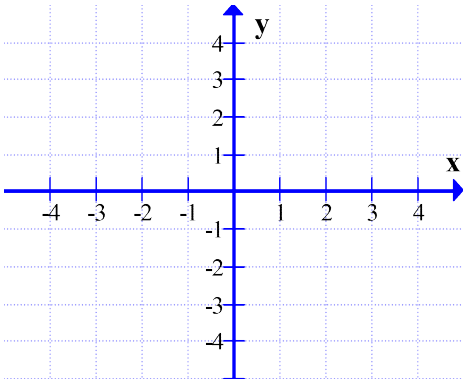
$y = a(x \pm \#)(x \pm \#)(x \pm \#) \ldots$

Find the leading term, and graph. Sketch a graph and label x and y intercepts.

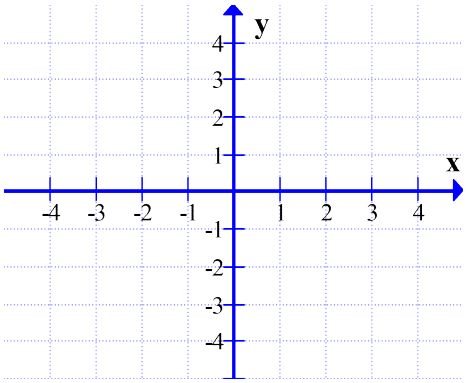
$f(x) = (x+1)(x-2)(x+2)$



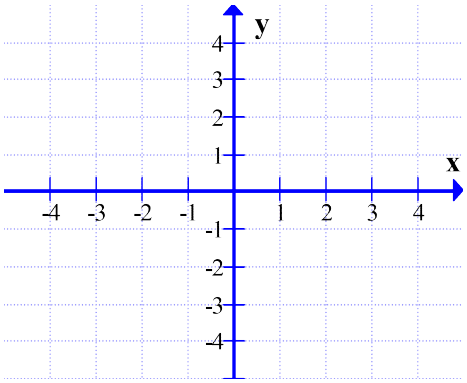
$f(x) = (x-2)(x-1)(x+4)$



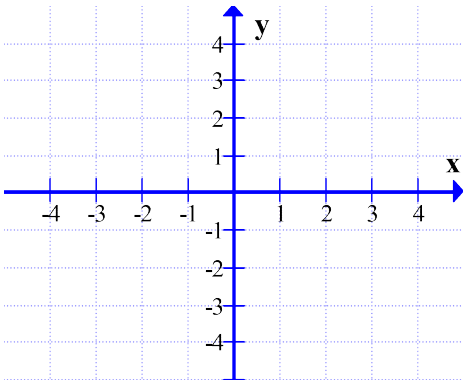
$f(x) = -(x-1)(x+2)(x-3)$



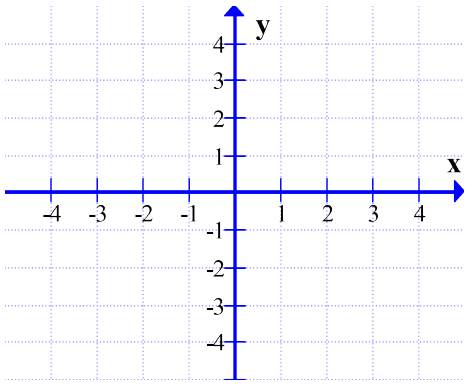
$f(x) = (x+2)^2(x-2)$



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



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

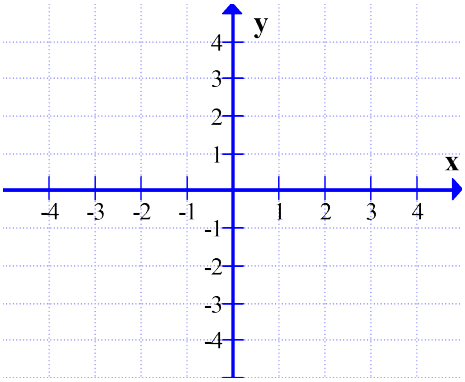


C12 - 3.4 - Graph Factored Form WS

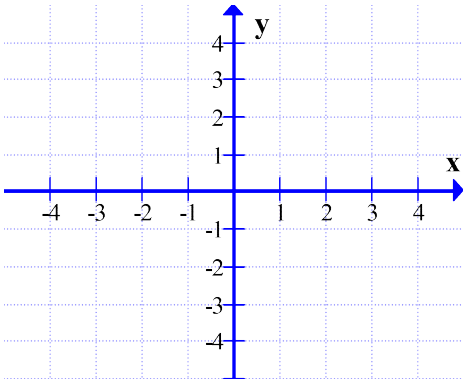
$y = a(x \pm \#)(x \pm \#)(x \pm \#) \ldots$

Find the leading term, and graph. Sketch a graph and label x and y intercepts.

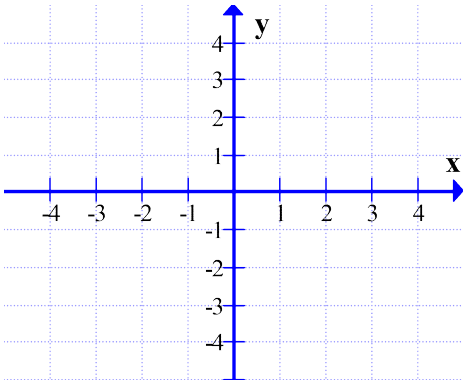
$f(x) = -(x+1)(x-2)(x+2)$



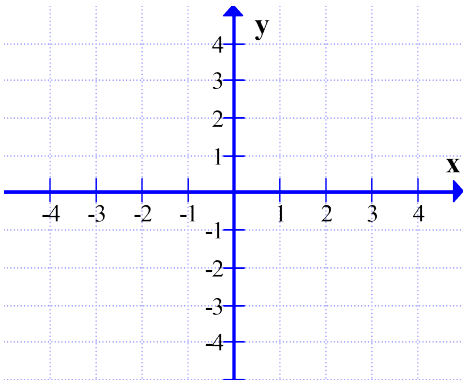
$f(x) = -(x+1)(x-1)(x+4)$



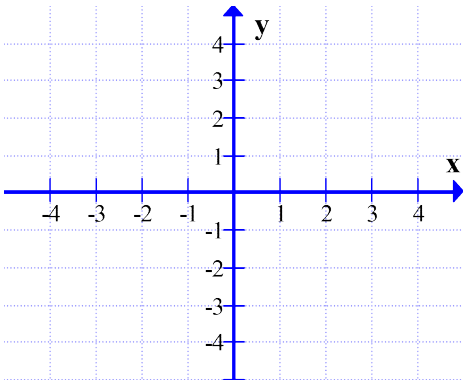
$f(x) = (x-1)^2(x+2)(x-3)^3$



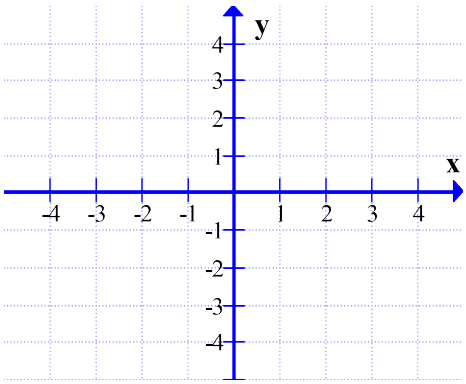
$f(x) = (x+2)(x+2)(x-2)(x-2)$



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



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

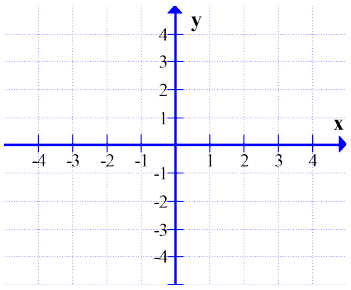


C12 - 3.4 - $x - int, y - int$ to Factored form WS

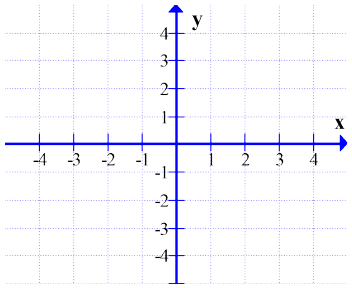
Find Equation in factored form, find the leading term, and graph.

$y = a(x \pm \#)^{\#}(x \pm \#)^{\#}(x \pm \#)^{\#} \ldots$

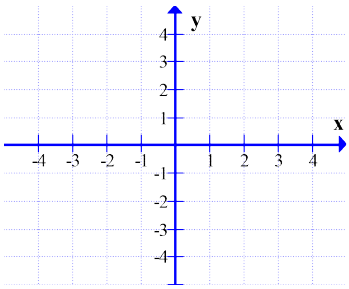
$x - int = 1,3$
$y - int = 3$



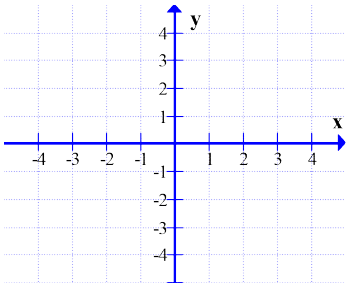
$x - int = 1,3$
$y - int = 6$



$x - int = -4, -2, 1$
$y - int = 4$



$x - int = -2, 0, 2$



$x - int = -1, 1, 1$
$y - int = 1$

$x - int = -2, 1, 3$
$y - int = 6$

$x - int = -2, -2, 2$
$y - int = -8$

$x - int = -2, -2, -2$
$y - int = 4$

C12 - 3.5 - Open Rectangular Box Cut Side x WS

An open rectangular box is made by cutting equal lengths from each corner of a 10 cm by 8 cm rectangular piece of cardboard, then folding up the sides. Find the length of the square that must be cut from each corner so the box has a volume of 48 cm^3. And find Max Volume. x=1,2, V=52.52

C12 - 3.5 - Word Problems

An open rectangular box is made by cutting equal lengths from each corner of a 4 cm by 6 cm rectangular piece of cardboard, then folding up the sides. Find the length of the square that must be cut from each corner so the box has a volume of 8 cm^3. And find Max Volume. x=1, V=8.45

5 cm by 7 cm: volume of 6 cm^3. x=2, V=15.02

9 cm by 11 cm: volume of 45 cm^3. x=3, V=72.42

A box of 1 cm^3 length's are increased by the same amount. Find the increase, the new dimensions and Volume if the new volume is 8 times larger. x=1. 27 times larger. x=2

A box of 1x2x3 cm length's are increased by the same amount. Find the increase, the new dimensions and Volume if the new volume is 20 times larger. x=3. 4x5x6, V=120

1x2x3, 35 times larger. x=4, 5x6x7, V=210

1x2x3, 10 times larger. x=2, 3x4x5, V=210

A cylinder with the same radius as its height. Find the dimensions if the Volume is $\pi. 8\pi. 27\pi$

A cylinder with radius and height both 2 cm. Find the dimensions if both are increased by the same amount to have a Volume of $64\pi. \mathrm{x} = 2$. Volume of 27π. x=1

A cylinder with radius 2 cm and height 3 cm. Find the dimensions if both are increased by the same amount to have a Volume of $36\pi. \mathrm{x} = 1$. Volume of $80\pi. \mathrm{x} = 2$. Volume of $150\pi. \mathrm{x} = 3$

A company has the following revenue and cost functions on units: $R(x) = x^3 \; and \; C(x) = 6x^2 - 11x - 6$. Find the number of units to break even. To profit \$24. To profit \$60. To profit \$720.