C11 - 3.1 - Quadratics Graphing x^2 TOV Notes

Graphing: $y = x^2$

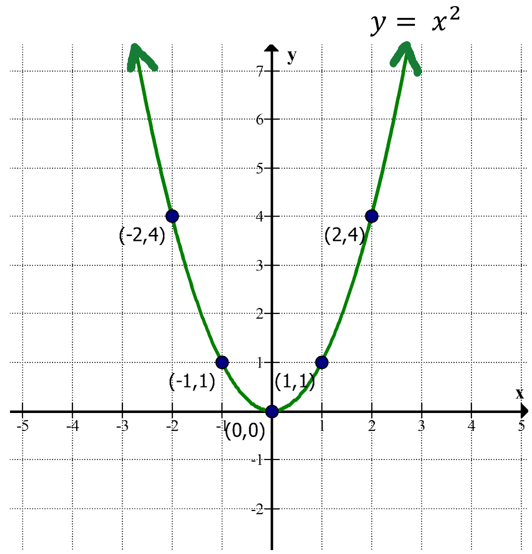


Table of Values

	x	y	Pt.
	-2	4	(-2,4)
	-1	1	(-1,1)
Vertex:	0	0	(0,0)
	1	1	(1,1)
	2	4	(2,4)

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

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

$y = x^2$
$y = (0)^2$
$y = 0$

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

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

Notice: the pattern from the vertex (0,0) is **symmetrical** on both sides.

Over 1, 1 squared = 1, up 1. Back to the vertex. Over 2, 2 squared = 4, up 4.

$V: (0,0)$

$AOS: x = 0$ $\quad$ $R: y \geq 0$

Range

Domain

xER

C11 - 3.1 - Quadratic Vertical Translation Notes $y = x^2 + q$

Graphing: $y = x^2 + c$

$y = x^2 + 1$

$y = x^2 + 1$

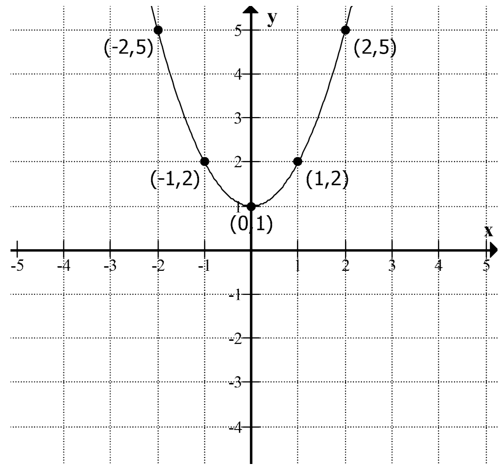


Table of Values

x	y
-2	5
-1	2
0	1
1	2
2	5

Pt.
(-2,5)
(-1,2)
(0,1)
(1,2)
(2,5)

$y = x^2 + 1$
$y = (-2)^2 + 1$
$y = 4 + 1$
$y = 5$

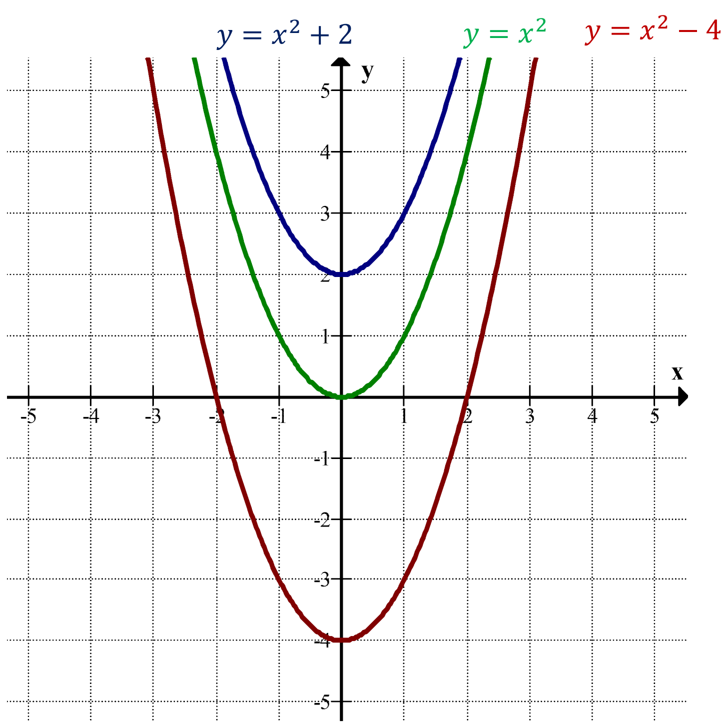
$y = x^2 + 1$
$y = (-1)^2 + 1$
$y = 1 + 1$
$y = 2$

$y = x^2 + 1$
$y = (0)^2 + 1$
$y = 0 + 1$
$y = 5$

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

$y = x^2 + 1$
$y = (2)^2 + 1$
$y = 4 + 1$
$y = 5$

Notice: the graph of $y = x^2 + 1$ is the graph $y = x^2$ shifted up 1. "c" is the y intercept. "c" is only the vertex if there is no "b".



C11 - 3.1 - Quadratics Horizontal Translation Notes $(x-p)^2$

Graphing: $y = (x-p)^2$

$y = (x-2)^2$

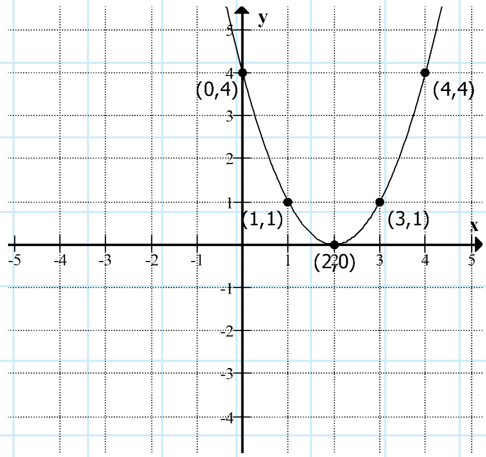


Table of Values

x	y
0	4
1	1
2	0
3	1
4	4

Pt.
(0,4)
(1,1)
(2,0)
(3,1)
(4,4)

$y=(x-2)^2$
$y=((0)-2)^2$
$y=(0-2)^2$
$y=(-2)^2$
$y=4$

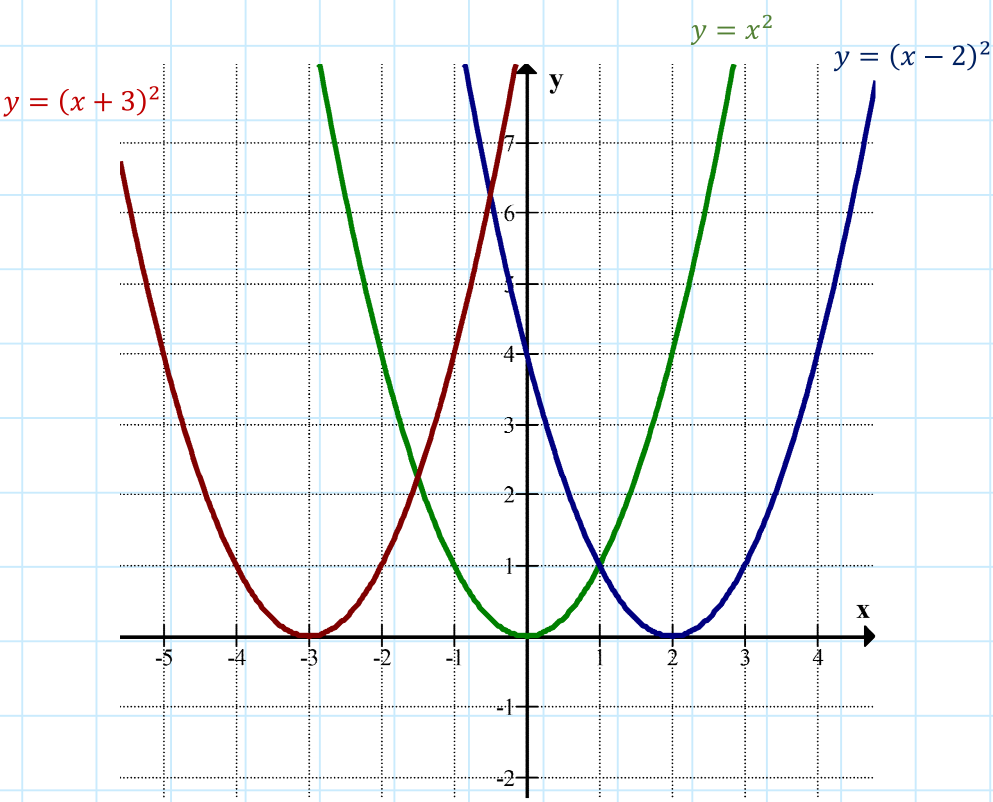
$y=(x-2)^2$
$y=((1)-2)^2$
$y=(1-2)^2$
$y=(-1)^2$
$y=1$

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

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

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

Notice: the graph of $y = (x-p)^2$ is the graph $y = x^2$ shifted right 2.
Notice we shift the opposite of "p".



C11 - 3.1 - Quadratics Reflection Notes $-x^2$

Graphing: $y = -x^2$

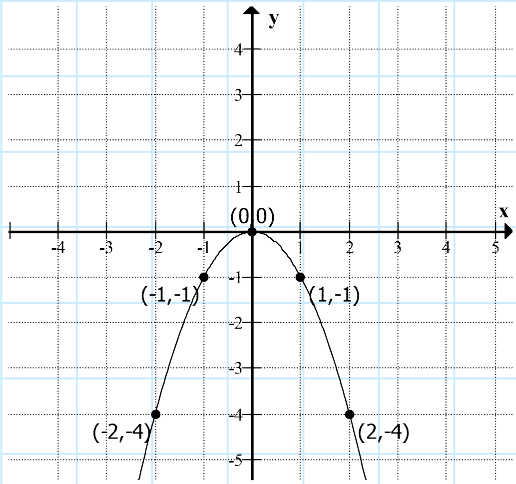
$y = -x^2$

Table of Values

x	y
-2	-4
-1	-1
0	0
1	-1
2	-4

Pt.
(-2,-4)
(-1,-1)
(0,0)
(1,-1)
(2,-4)

$y = -x^2$



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

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

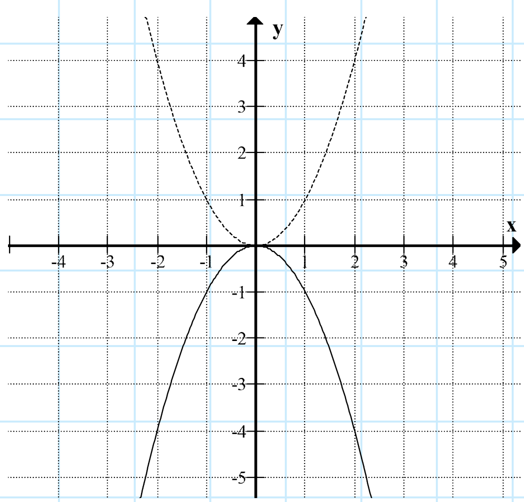
$y = -x^2$
$y = -(0)^2$
$y = -4$

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

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

Notice: The graph of $y = -x^2$ is the graph of $y = x^2$ opening downwards.
Over 1, 1 squared = 1, down 1. Back to the vertex. Over 2, 2 squared = 4, down 4.

$y = x^2$



$y = -x^2$