C11 - 3.2 - Quadratics Vertical Exp Notes $(2x^2, \frac{1}{2}x^2)$

Graphing: $y = ax^2$

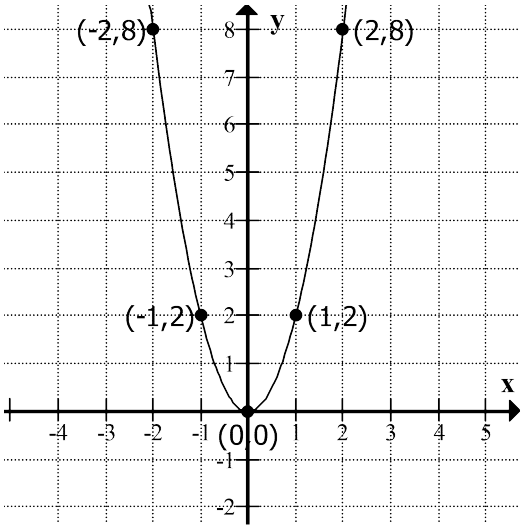
$y = 2x^2$

Table of Values

x	y
-2	8
-1	2
0	0
1	2
2	8

Pt.
$(-2,8)$
$(-1,2)$
$(0,0)$
$(1,2)$
$(2,8)$

$y = 2x^2$



$y = 2x^2$	$y = 2x^2$	$y = 2x^2$	$y = 2x^2$	$y = 2x^2$
$y = 2(-2)^2$	$y = 2(-1)^2$	$y = 2(0)^2$	$y = 2(1)^2$	$y = 2(2)^2$
$y = 2(4)$	$y = 2(1)$	$y = 2(0)$	$y = 2(1)$	$y = 2(4)$
$y = 8$	$y = 2$	$y = 0$	$y = 2$	$y = 8$

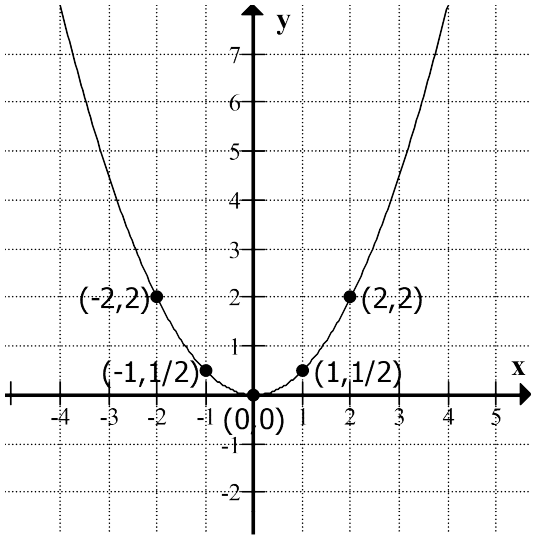
Notice: the pattern from the vertex (0,0) is symmetrical on both sides.
Over 1, 1 squared = 1, 1 times 2 = 2, up 2. Back to the vertex. Over 2, 2 squared = 4, 4 times 2 = 8, up 8.
In the last two steps, we are multiplying by 2 because $a = 2$.

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

Table of Values

x	y
-2	2
-1	$\frac{1}{2}$
0	0
1	$\frac{1}{2}$
2	2

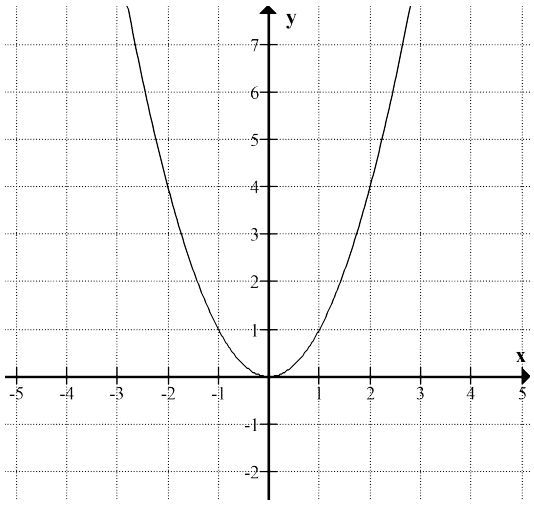
Pt.
$(-2,2)$
$(-1,\frac{1}{2})$
$(0,0)$
$(1,\frac{1}{2})$
$(2,2)$



$y = \frac{1}{2}x^2$	$y = \frac{1}{2}x^2$	$y = \frac{1}{2}x^2$	$y = \frac{1}{2}x^2$	$y = \frac{1}{2}x^2$
$y = \frac{1}{2}(-2)^2$	$y = \frac{1}{2}(-1)^2$	$y = \frac{1}{2}(0)^2$	$y = \frac{1}{2}(1)^2$	$y = \frac{1}{2}(2)^2$
$y = \frac{1}{2}(4)$	$y = \frac{1}{2}(1)$	$y = \frac{1}{2}(0)$	$y = \frac{1}{2}(1)$	$y = \frac{1}{2}(4)$
$y = 2$	$y = \frac{1}{2}$	$y = 0$	$y = \frac{1}{2}$	$y = 2$

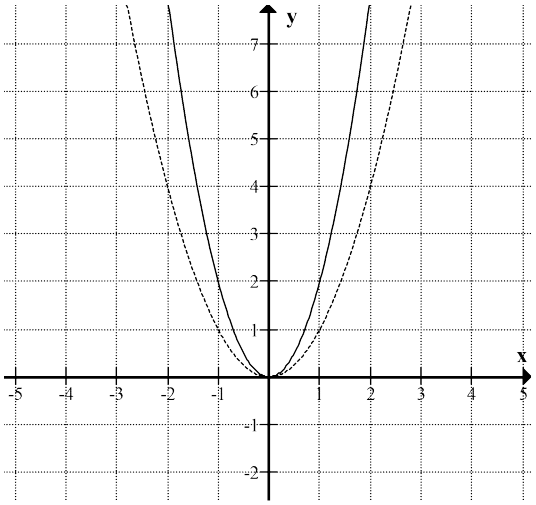
C11 - 3.2 - Quadratics Compression/Expansion Summary

$y = x^2$



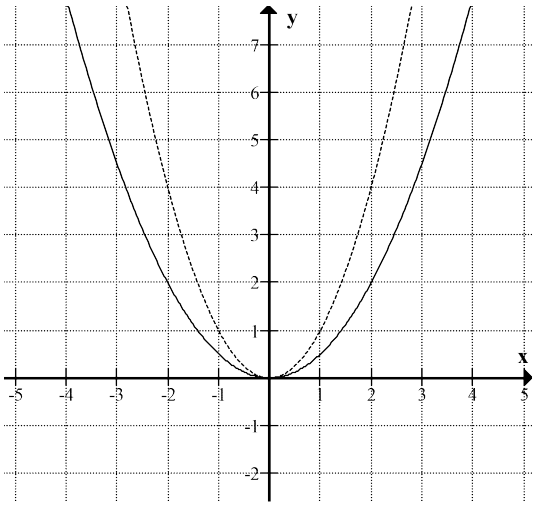
Expand

$y = 2x^2$

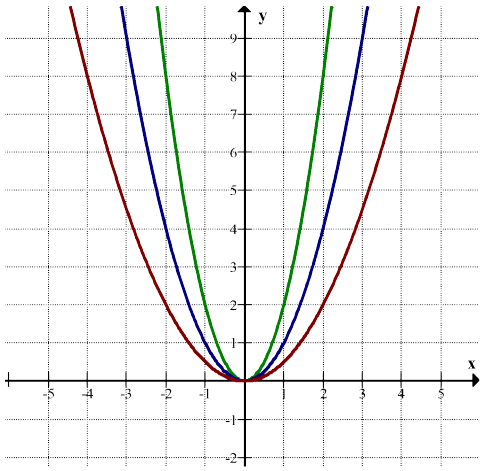


Compress

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



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

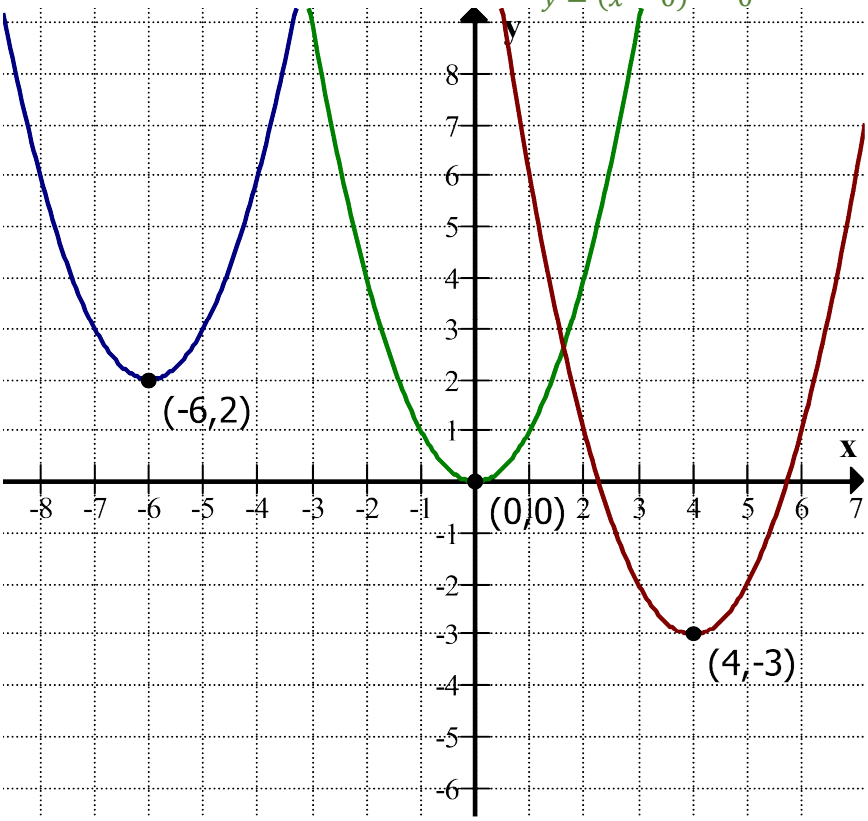


C11 - 3.2 - Quadratics Vertical/Horizontal Combo Notes

$y = 1(x + 6)^2 + 2$

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

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



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

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

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