

Mathematics 10D

Q.04 – Graphing Quadratics

Mr. D. Hagen

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Q.04 – Graphing Quadratics from the vertex form.

$$y = a(x-h)^2 + k$$

Base: $y = x^2$

a : vertical stretch/compression.

→ $a > 1$ or $a < -1$, then it's more skinny

→ a between -1 and 1 , then a is wider than x^2

→ vertical stretch means you multiply the a with the y -coordinates.

h : horizontal shift

→ you add/subtract h to the x -coordinates

k : vertical shift

→ you add/subtract to the y -coordinates.

Together, these are called transformations

→ We need two table of values, one for x^2 and one for $y = a(x-h)^2 + k$.

$y = x^2$

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

$$y = a(x-h)^2 + k$$

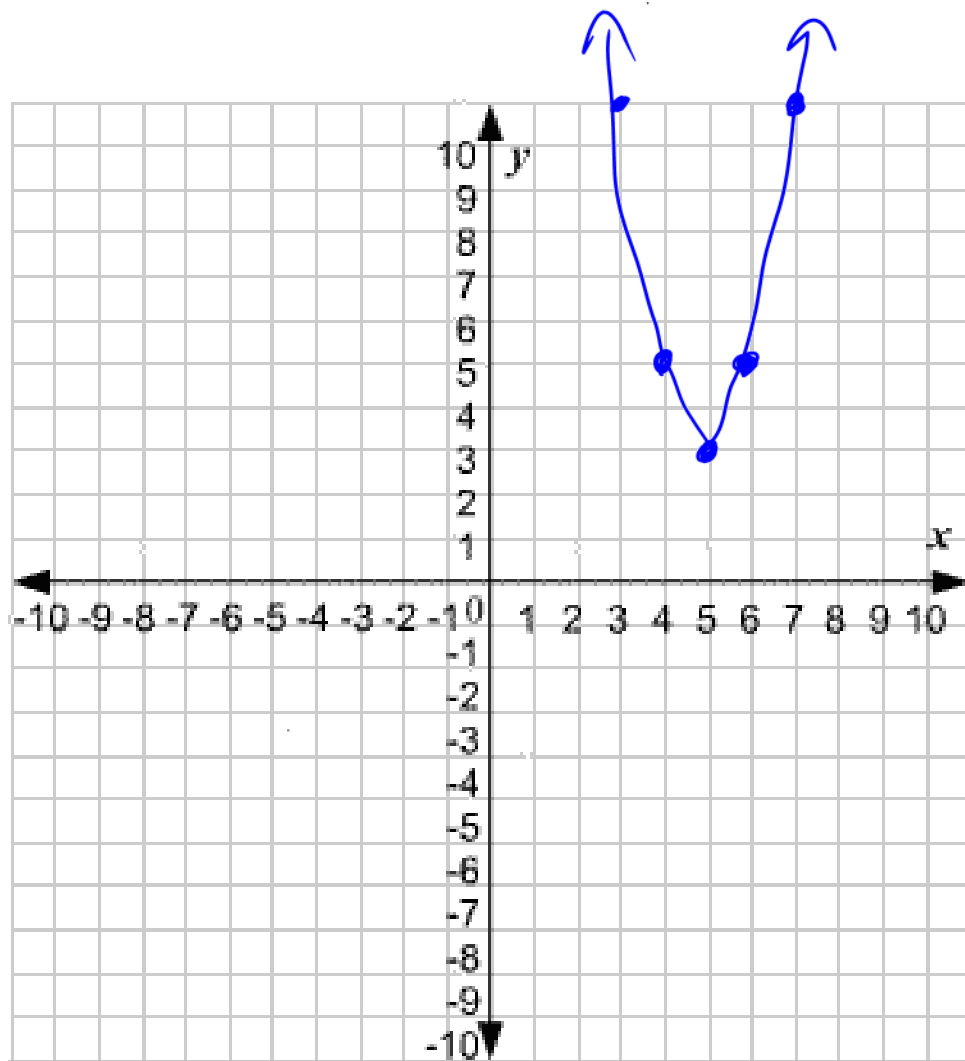
$x+h$	$ay+k$
$-2+h$	$4a+k$
$-1+h$	$1a+k$
$0+h$	$0a+k$
$1+h$	$1a+k$
$2+h$	$4a+k$

$$y = 2(x - 5)^2 + 3$$

1. Vertical Stretch of 2 y
2. Horizontal Shift of +5 x
3. Vertical Shift of +3 y

$$y = x^2$$

x	y	$x + 5$	$2y + 3$
-2	4	3	11
-1	1	4	5
0	0	5	3
1	1	6	5
2	4	7	11



$$y = \frac{-1}{2} (x - (-4))^2 + 6$$

1. V. Str. of $-\frac{1}{2}$ y

2. H. Sh. of -4 x

3. V. Sh. of $+6$ y

x	y	$x - 4$	$-\frac{1}{2}y + 6$
-2	4	-6	4
-1	1	-5	5.5
0	0	-4	6
1	1	-3	5.5
2	4	-2	4

