

Unit 8 Day 4 Notes on Graphing Quadratics - Vertex Form Day 2

Key

What is the vertex form of a quadratic function?

$$y = a(x - \underline{h})^2 + \underline{k}$$

VERTEX (h, k)

Think back to function notation...

For #1-4, given a function $h(x)$, what would the following transformations look like on a graph?

1) $h(x+7)$

↑
Left 7

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

↑ Vert. * Shrink by $\frac{1}{7}$
↑ Right 1

3) $3h(x) - 5$

↑ Vert. * stretch by 3
↑ Down 5

4) $-h(x-2)$

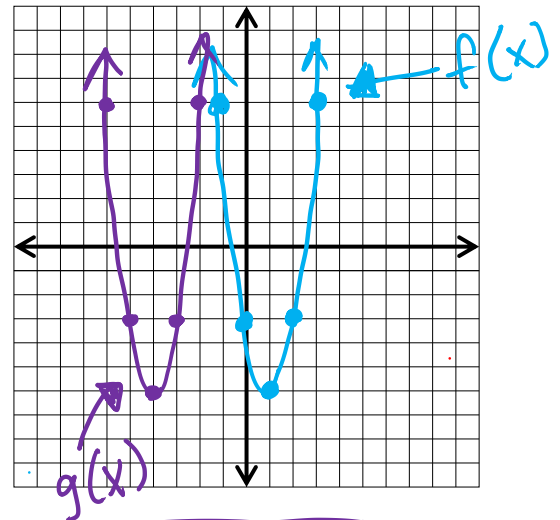
↑ Reflection over x-axis
↑ Right 2

Graphing a Quadratic in Vertex Form

5. a) Graph $f(x) = 3(x-1)^2 - 6$

VERTEX (1, -6)
OPENS UP

Pattern
3
9
15



b) How does this graph compare to the parent function?

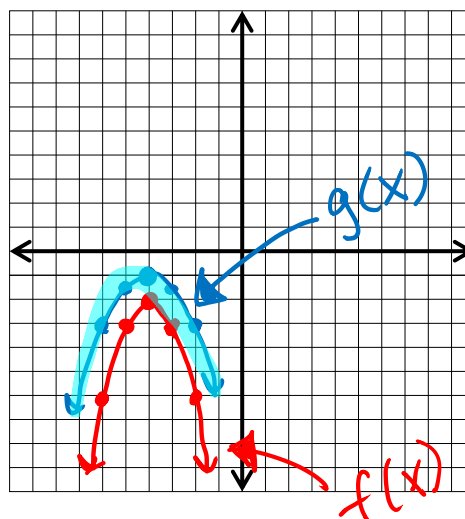
- ① Vert. stretch by 3
- ② Right 1
- ③ Down 6

c) On the same graph, using the function $f(x)$ from the example above, graph $g(x) = f(x+5)$.

d) How will this transform the graph of $f(x)$? LEFT 5

6. a) Graph $f(x) = -(x+4)^2 - 2$
- VERTEX $(-4, -2)$
- OPENS DOWN

Pattern
-1
-3
-5



- b) Using function $f(x)$ graph $g(x) = \frac{1}{2}f(x)$.

- c) How will this transform the graph of $f(x)$?

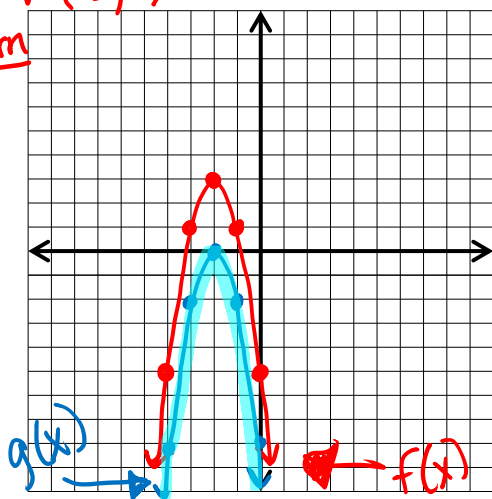
Vert. shrink
by $\frac{1}{2}$

Now your turn...

For #7-10 graph $g(x)$.

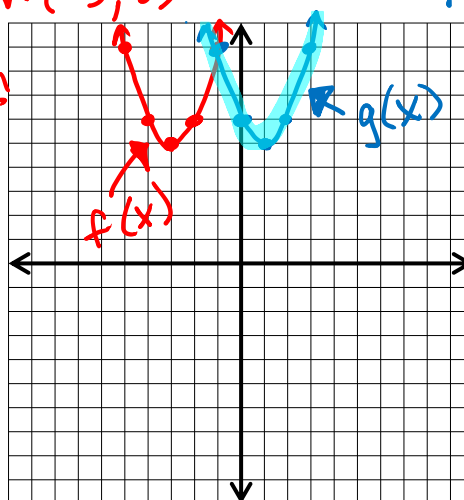
7. $f(x) = -2(x+2)^2 + 3$; $g(x) = f(x) - 3$
- V: $(-2, 3)$
- Down 3

Pattern
-2
-6
-10



8. $f(x) = (x+3)^2 + 5$; $g(x) = f(x-4)$
- V: $(-3, 5)$
- Right 4

Pattern
1
3
5



9. $f(x) = \frac{1}{2}(x-6)^2 - 4$; $g(x) = -f(x)$
- V: $(6, -4)$
- reflection over x-axis

Pattern
 $\frac{1}{2} = .5$

$\frac{3}{2} = 1.5$

$\frac{5}{2} = 2.5$

