

# Transformations of Quadratic Functions – Lesson

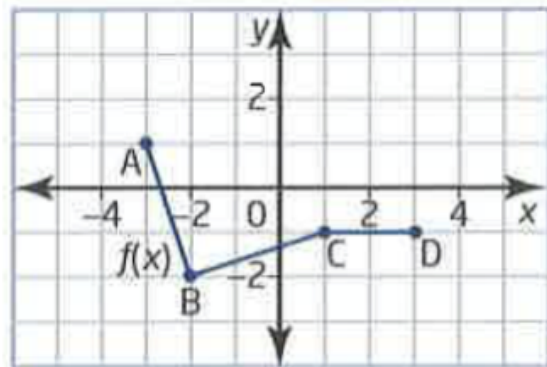
MCR3U

Jensen

## DO IT NOW!

a) Complete the table of values for the function  $f(x)$  and  $g(x)$ . Then use the table of values to plot image points and graph the function  $g(x)$

$f(x) : (x, f(x))$	$g(x) : (x, f(x) + 4)$
A(-3, 1)	A'(-3, 5)



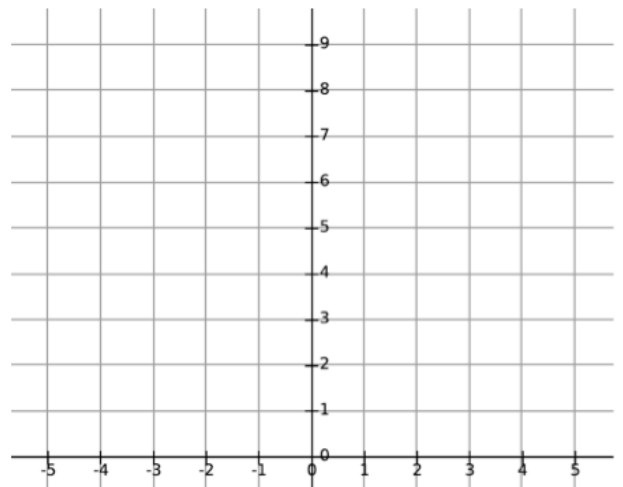
## Quadratic Functions

Base Function:

Key Points:

$x$	$y$

Graph of Base Function:



## Order of Transformations

1. stretches, compressions, reflections
2. translations

**Example 1:** If  $f(x) = x^2$ , describe the changes and write the transformed function:

a)  $g(x) = 2f(x)$

b)  $g(x) = f(2x)$

c)  $g(x) = f(x) + 4$

d)  $g(x) = f(x + 3)$

e)  $g(x) = -f(x)$

f)  $g(x) = f(-x)$

**Example 2:** For each of the following functions, describe the transformations to  $f(x) = x^2$  in order and write the transformed equation.

a)  $g(x) = -2f[-3(x + 3)] - 1$

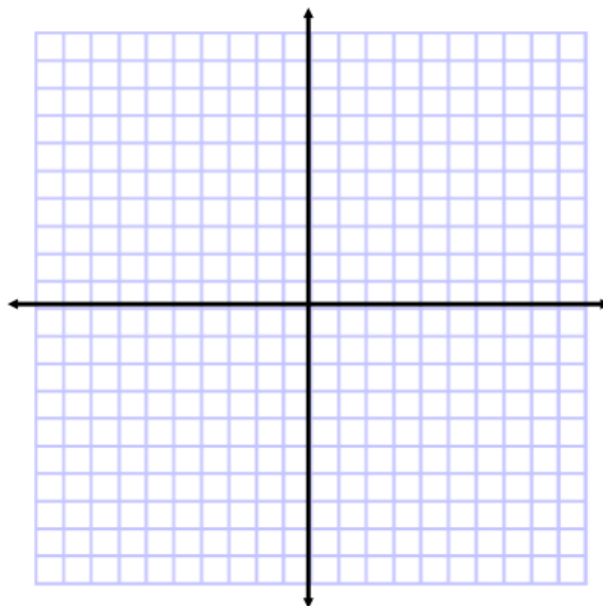
b)  $y = \frac{1}{2}f[-3(x - 2)] + 5$

**Example 3:** for each of the following functions...

- i) make a table of values for the parent function
- ii) graph the parent function  $f(x) = x^2$
- iii) describe the transformations
- iv) make a table of values of image points
- v) graph the transformed function and write it's equation

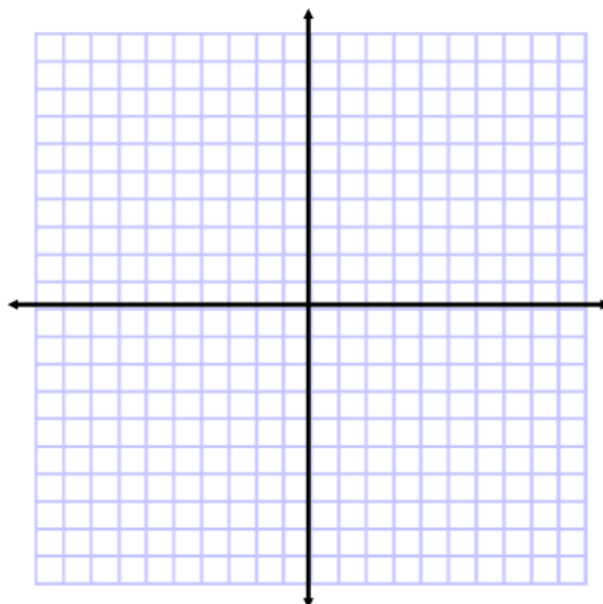
a)  $g(x) = -f(2x)$

$x$	$y$



b)  $g(x) = f\left[-\frac{1}{2}(x - 1)\right]$

$x$	$y$



c)  $g(x) = -2f[-3(x + 3)] - 1$

$x$	$y$

