

**Algebra II**  
**Auch**

**Section 5.1**  
**Date:**

Objectives

- Transform quadratic functions.
- Describe the effects of changes in the coefficients of  $y = a(x - h)^2 + k$

**Vocabulary**

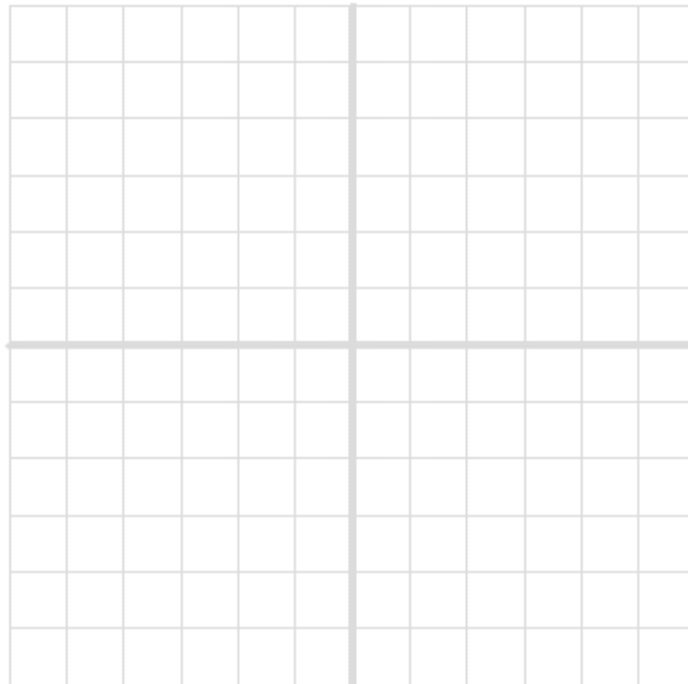
Quadratic function-  
Parabola-  
Vertex of a parabola-  
Vertex form-

**Example 1**

**Graph**  $f(x) = x^2 - 6x + 8$  using a table

Make a table. Plot enough ordered pairs to see both sides of the curve.

<b>x</b>	$f(x) = x^2 - 6x + 8$	$(x, f(x))$
<b>1</b>		
<b>2</b>		
<b>3</b>		
<b>4</b>		
<b>5</b>		

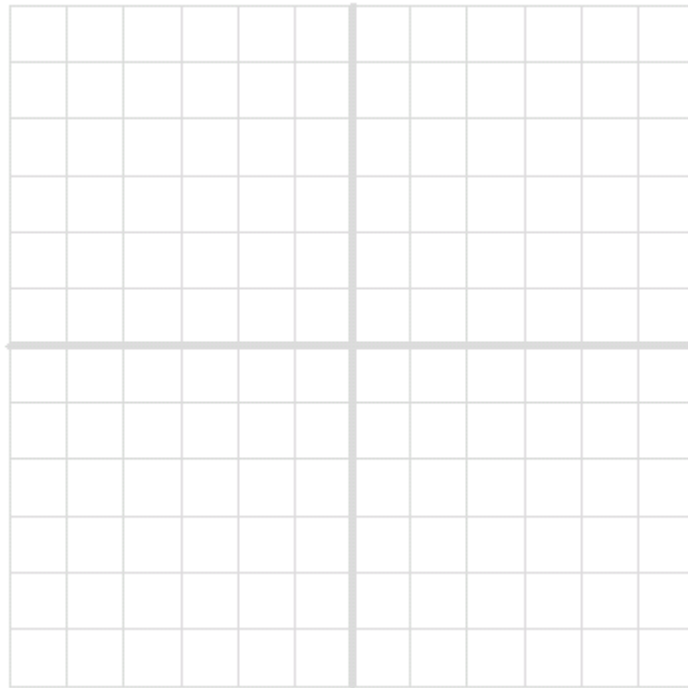


**Try it!**

**Graph**  $f(x) = -x^2 + 6x - 8$  using a table

Make a table. Plot enough ordered pairs to see both sides of the curve.

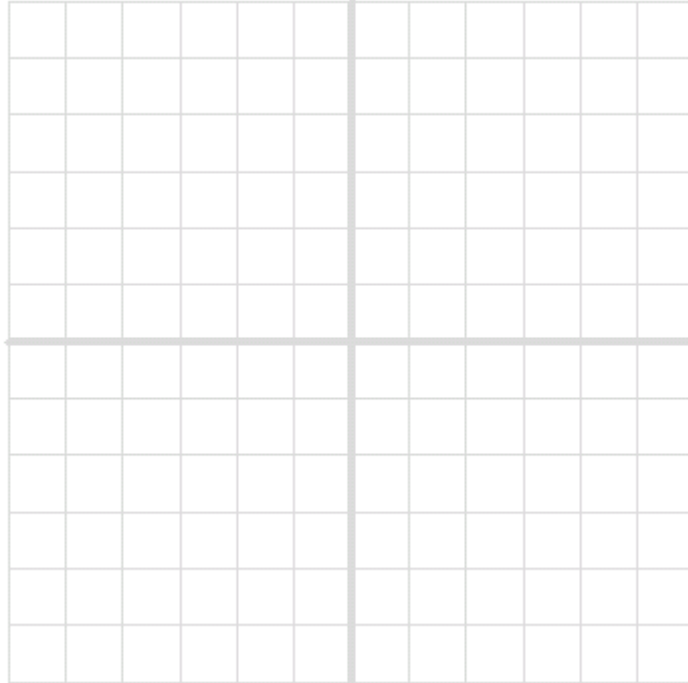
<b>x</b>	$f(x) = -x^2 + 6x - 8$	$(x, f(x))$
<b>1</b>		
<b>2</b>		
<b>3</b>		
<b>4</b>		
<b>5</b>		



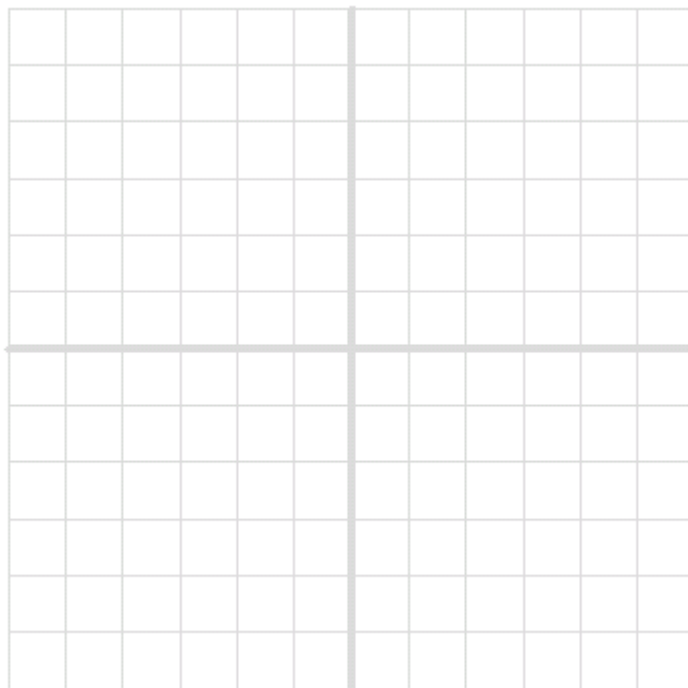
**Example 2    Translating Quadratic Functions**

Using the graph  $f(x) = x^2$  as a guide describe the transformation and then graph each function.

a)     $g(x) = (x + 3)^2 + 1$



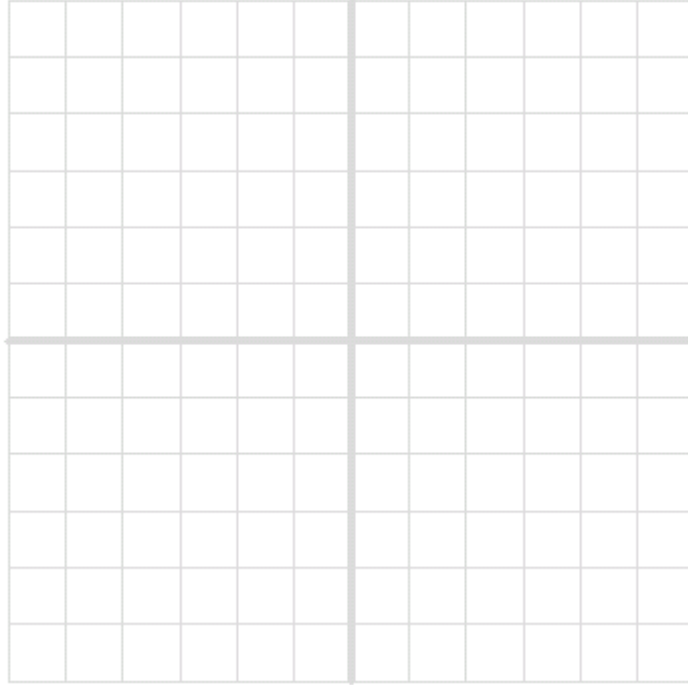
b)  $g(x) = (x-2)^2 - 1$



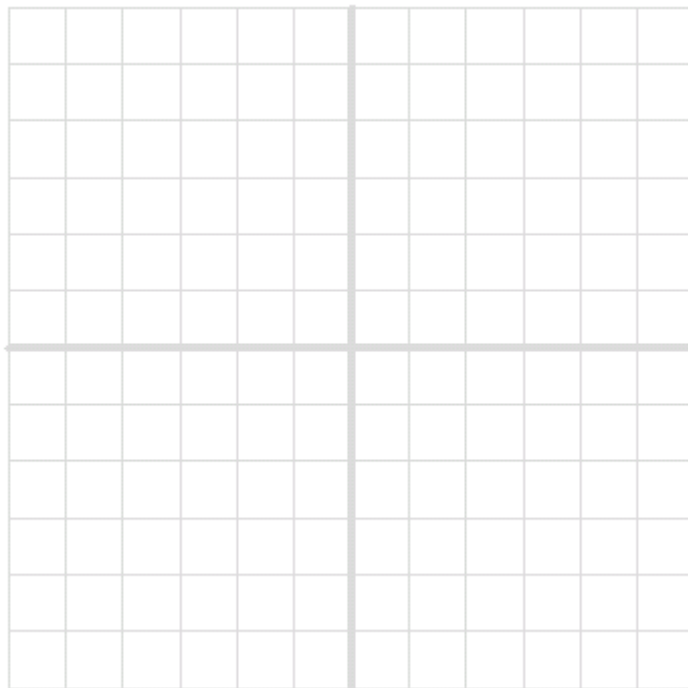
*Try it!*

Using the graph  $f(x) = x^2$  as a guide describe the transformation and then graph each function.

a)  $g(x) = x^2 - 5$



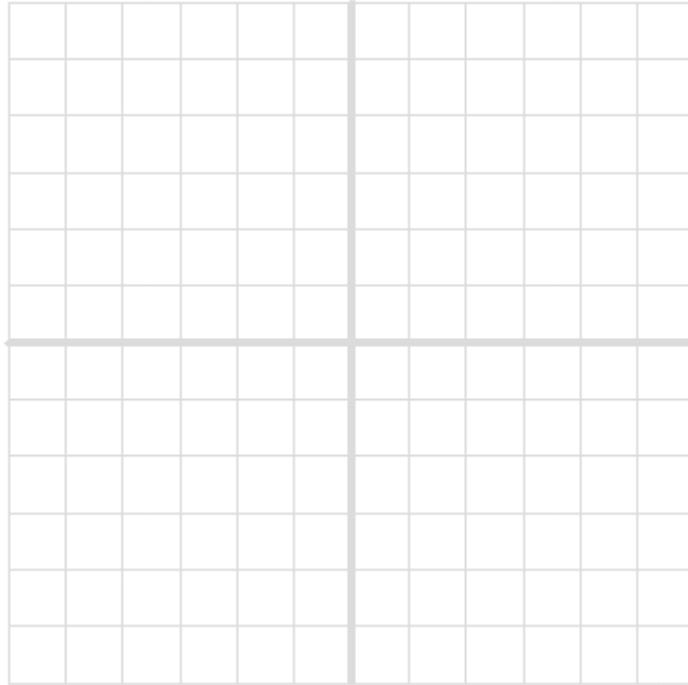
b)  $g(x) = (x + 3)^2 - 2$



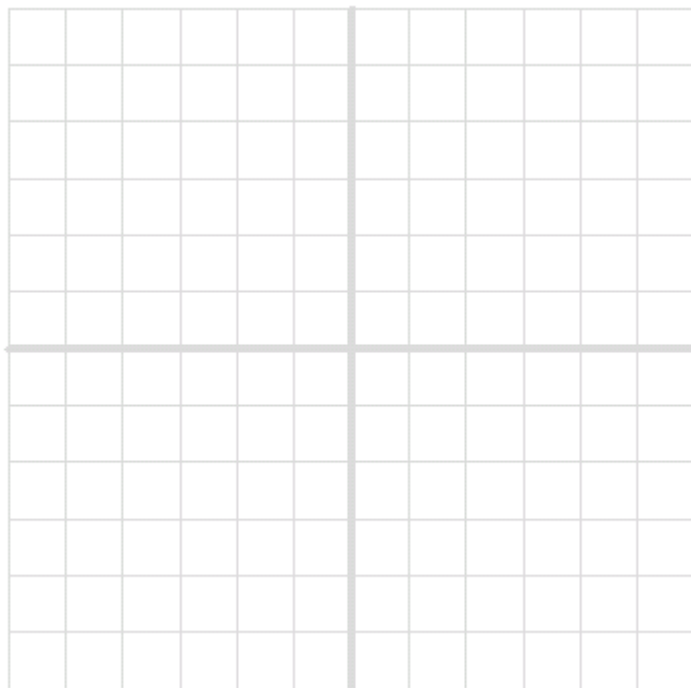
**Example 3 Reflecting, Stretching, and Compressing Quadratic Functions**

Using the graph  $f(x) = x^2$  as a guide describe the transformation and then graph each function.

a)  $g(x) = -4x^2$



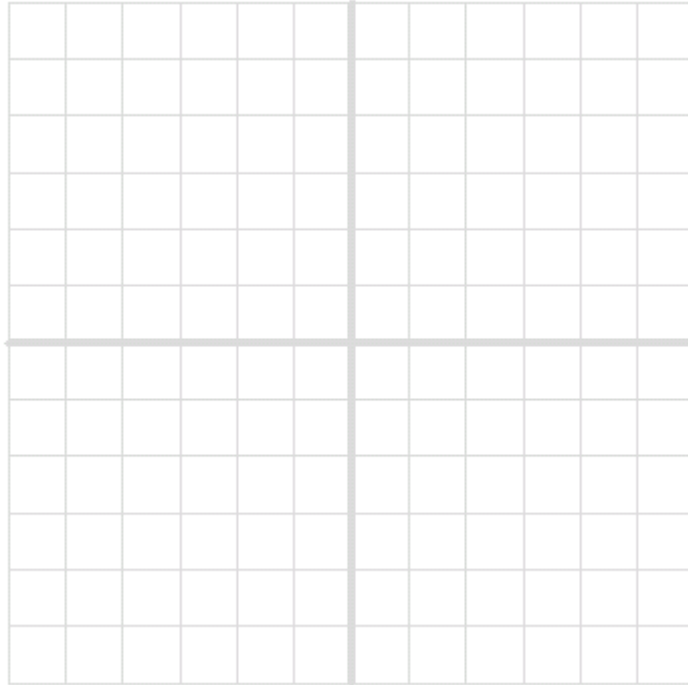
**b)**  $g(x) = \left(\frac{1}{2}x\right)^2$



*Try it!*

Using the graph  $f(x) = x^2$  as a guide describe the transformation and then graph each function.

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



b)  $g(x) = -\frac{1}{2}x^2$

