

LESSON
2-1

Reteach

Using Transformations to Graph Quadratic Functions

(continued)

Use the graph of $f(x) = x^2$ as a guide to graph transformations of quadratic functions.

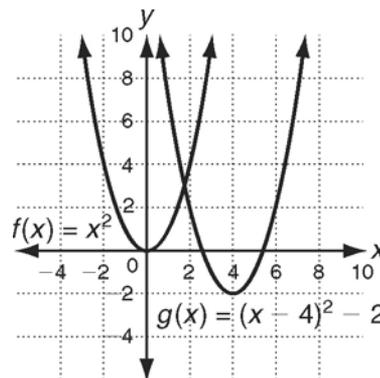
Horizontal and vertical translations change the vertex of $f(x) = x^2$.

Parent Function	Transformation
$f(x) = x^2$	$g(x) = (x - h)^2 + k$
Vertex: (0, 0)	Vertex: (h, k)

The translation shifts $f(x) = x^2$:
 h units right ($h > 0$) or left ($h < 0$) and
 k units up ($k > 0$) or down ($k < 0$).

The vertex of $g(x) = (x - 4)^2 - 2$
 is (4, -2).

The graph of $f(x) = x^2$ is shifted
 4 units right and 2 units down.



Use the graph of $f(x) = x^2$ as a guide. Find the vertex of each translation. Graph each function and then describe the transformation.

2. $g(x) = (x + 1)^2 - 3$
 Vertex: (-1, _____)

3. $h(x) = (x - 3)^2 + 2$
 Vertex: _____

