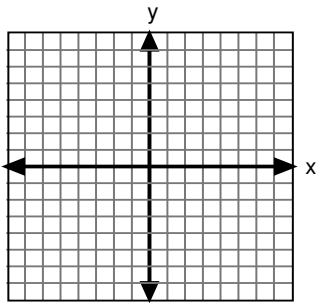


## 9.3 Vertex Form Worksheet

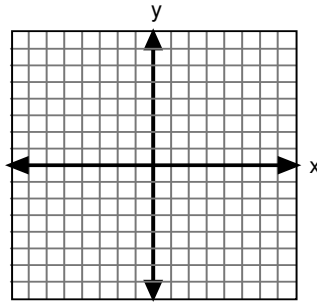
Given that vertex form of a quadratic function is  $f(x) = a(x - h)^2 + k$ , graph the parabola and state how it was translated from  $f(x) = x^2$ .

1.  $f(x) = (x - 3)^2 - 1$



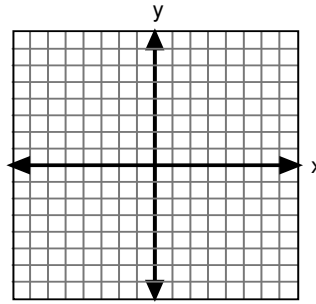
Vertex: \_\_\_\_\_  
 Opens: \_\_\_\_\_  
 Left/right \_\_\_\_\_ units.  
 Up/down \_\_\_\_\_ units.  
 Vertically stretched/  
 shrunk by \_\_\_\_\_

2.  $f(x) = -(x + 1)^2 - 2$



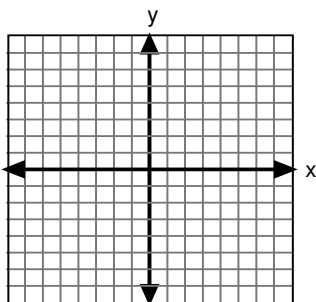
Vertex: \_\_\_\_\_  
 Opens: \_\_\_\_\_  
 Left/right \_\_\_\_\_ units.  
 Up/down \_\_\_\_\_ units.  
 Vertically stretched/  
 shrunk by \_\_\_\_\_

3.  $f(x) = \frac{1}{3}(x - 4)^2 + 6$



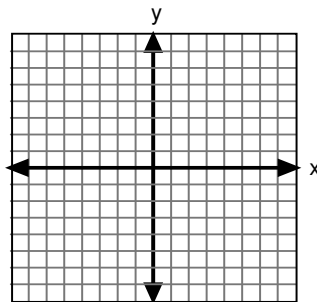
Vertex: \_\_\_\_\_  
 Opens: \_\_\_\_\_  
 Left/right \_\_\_\_\_ units.  
 Up/down \_\_\_\_\_ units.  
 Vertically stretched/  
 shrunk by \_\_\_\_\_

4.  $f(x) = -(x + 1)^2$



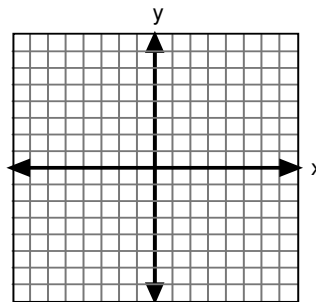
Vertex: \_\_\_\_\_  
 Opens: \_\_\_\_\_  
 Left/right \_\_\_\_\_ units.  
 Up/down \_\_\_\_\_ units.  
 Vertically stretched/  
 shrunk by \_\_\_\_\_

5.  $f(x) = (x + 5)^2 - 3$



Vertex: \_\_\_\_\_  
 Opens: \_\_\_\_\_  
 Left/right \_\_\_\_\_ units.  
 Up/down \_\_\_\_\_ units.  
 Vertically stretched/  
 shrunk by \_\_\_\_\_

6.  $f(x) = 3(x - 8)^2 + 2$



Vertex: \_\_\_\_\_  
 Opens: \_\_\_\_\_  
 Left/right \_\_\_\_\_ units.  
 Up/down \_\_\_\_\_ units.  
 Vertically stretched/  
 shrunk by \_\_\_\_\_