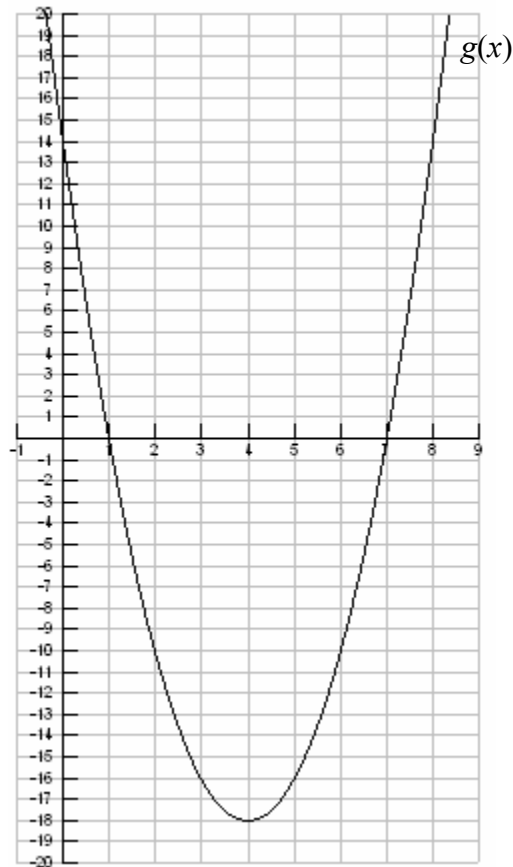


**Three Formulas for a Quadratic Function**

After your reading of Section 5.5, complete the following. You might find it helpful to reread Section 2.6

The function  $g(x)$  shown in the graph is a translation of  $f(x) = 2x^2$ .

- (1) 1. Find a formula for  $g(x)$  using the fact that it is a translation of  $f(x) = 2x^2$ .  
Tip: Check with a grapher.
- (1) 2. Simplify the formula for  $g(x)$  so that it has the form  $g(x) = ax^2 + bx + c$  (standard form).  
Tip: Check with a grapher.



- (1) 3.  $g(x)$  is a quadratic function that can be factored.  
Write down the formula in factored form.  
Tip: Check with a grapher
- (2) 4. Use the graph to find the coordinates of the vertex of  $g(x)$ . \_\_\_\_\_  
Is there a connection between the **coordinates of the vertex** and the formula in Question 1?  
Explain.
- (2) 5. Use the graph to find where  $g(x)$  crosses the  $y$ -axis. \_\_\_\_\_  
Is there a connection between the  **$y$ -intercept** and the formula in Question 2? Explain.
- (2) 6. Use the graph to find where  $g(x)$  crosses the  $x$ -axis. \_\_\_\_\_  
Is there a connection between the **zeros ( $x$ -intercepts)** and the formula in Question 3?  
Explain.
- (1) 7. Write down three different formulas for  $g(x)$ .

**vertex form:**  $g(x) =$  \_\_\_\_\_

**standard form:**  $g(x) =$  \_\_\_\_\_

**factored form:**  $g(x) =$  \_\_\_\_\_