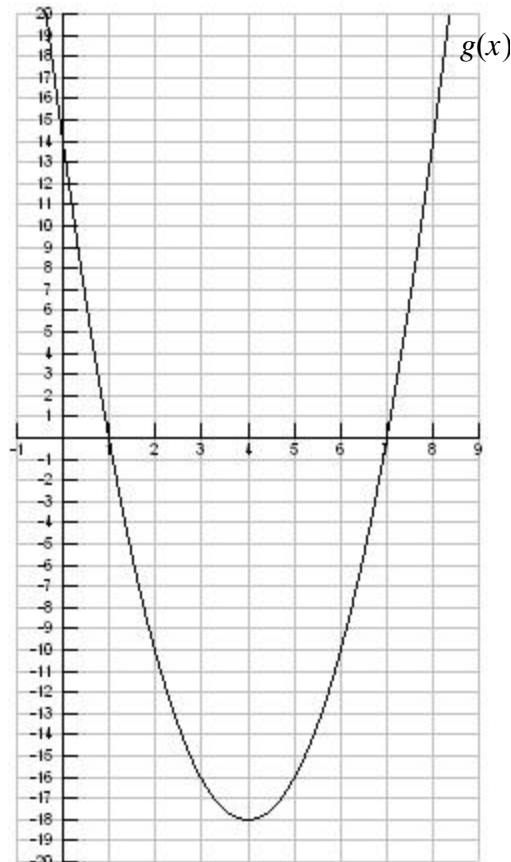


### Three Formulas for a Quadratic Function

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



- Find a formula for  $g(x)$  using the fact that it is a translation of  $f(x) = 2x^2$ .  
Tip: Check with a grapher.
- 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.

- $g(x)$  is a quadratic function that can be factored.  
Write down the formula in factored form.  
Tip: Check with a grapher

- 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.

- 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.

- 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.

- Write down three different formulas for  $g(x)$ .

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

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

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

