

Solve the equation:

$$5(x - 6)^2 = 100$$

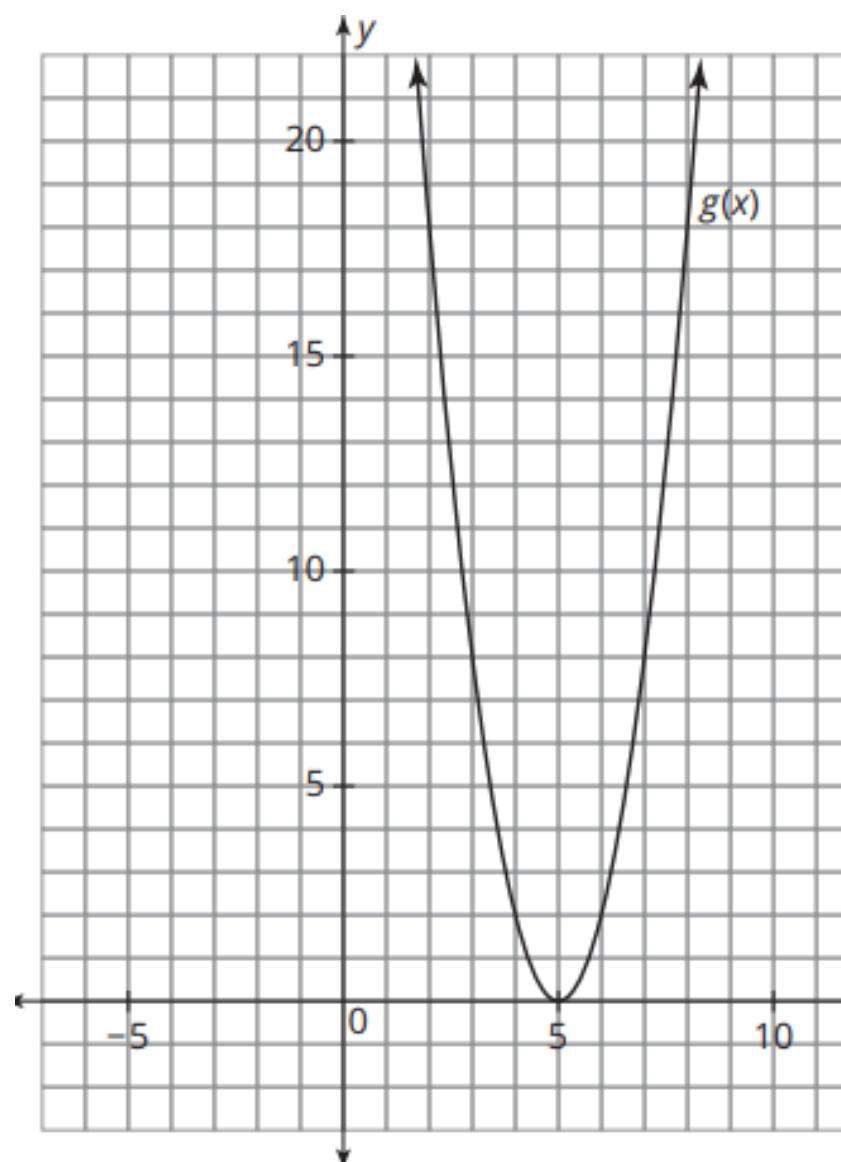
1. Consider the function  $h(x) = 2(x - 5)^2 - 1$ .

a. Write  $h(x)$  in terms of  $g(x)$  and describe the transformation.

b. Sketch a graph of  $h(x)$  on the same coordinate plane as  $g(x)$ .

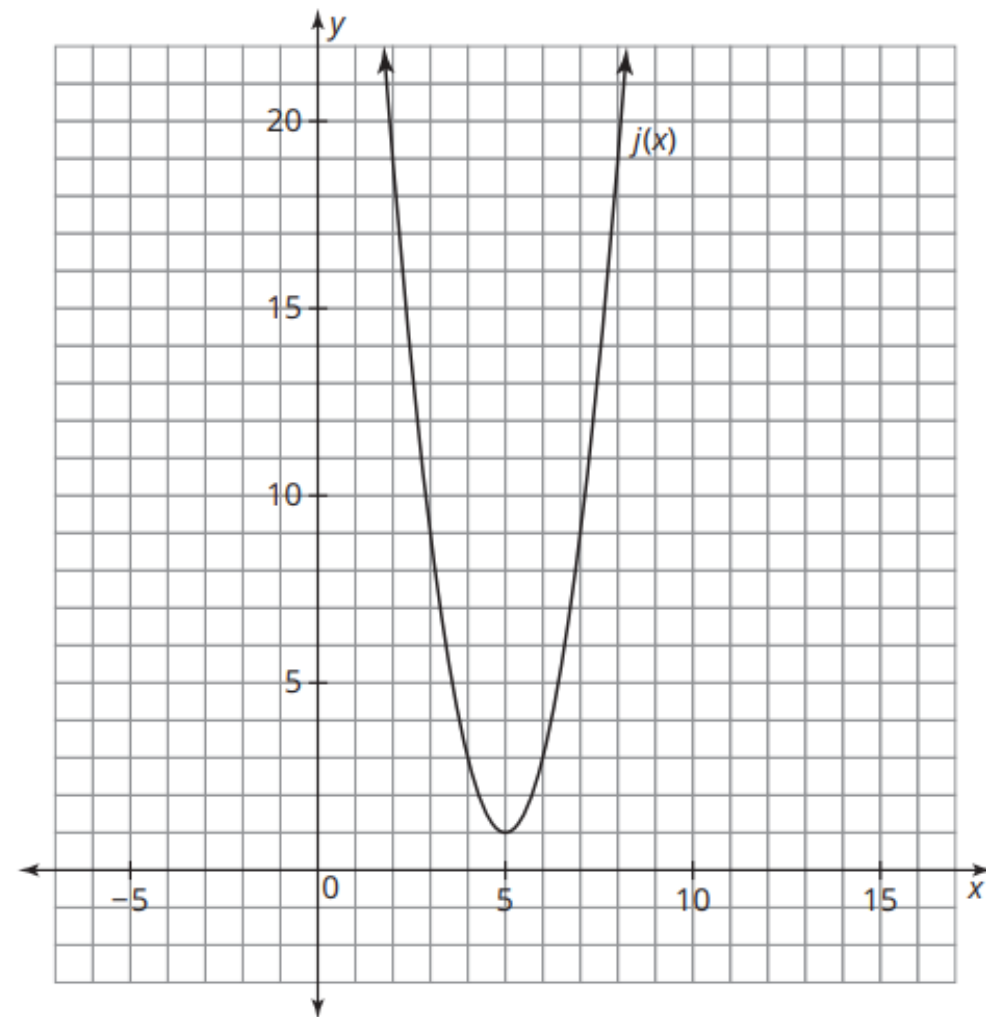
2. Consider the equation  $0 = 2(x - 5)^2 - 1$ .

a. Determine the solution algebraically and label the solution on the graph.



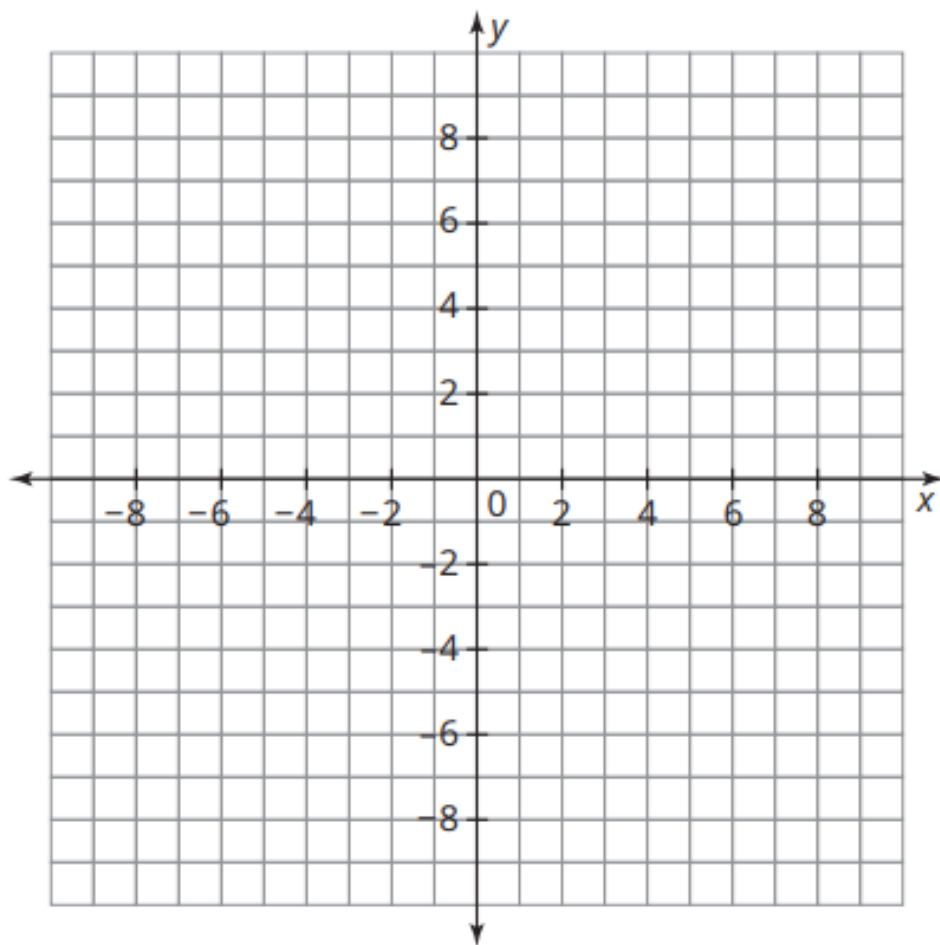
Notice the graph of  $j(x)$  does not cross the  $x$ -axis, which means there are no real zeros for this function.

**3. Solve  $0 = 2(x - 5)^2 + 1$  algebraically to show that  $x$  is not a real number.**

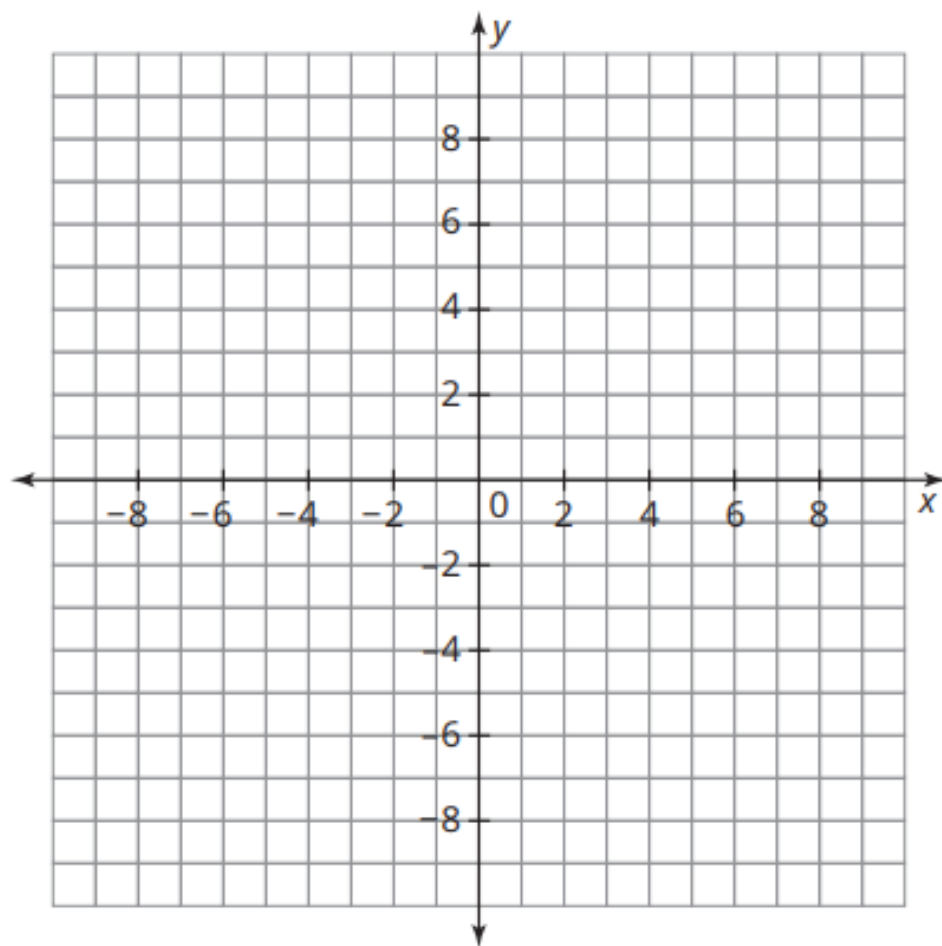


4. Sketch a graph of each quadratic function. Determine the types of zeros of each function. Solve algebraically and interpret on the graph in terms of the axis of symmetry and the points on the parabola.

a.  $f(x) = -3(x - 2)^2 + 4$



b.  $f(x) = \frac{1}{4}(x + 5)^2 + 2$



**4. Write an equation and sketch a graph that shows each number of zeros.**

**a. 1 unique real zero**

**b. 2 real zeros**

**c. no real zeros**