Examples and Exercises

1. Find (if possible), the zeros of the following quadratic functions.

   (a) $f(x) = x^2 + 5x - 14$

   (b) $g(x) = x^2 + 1$

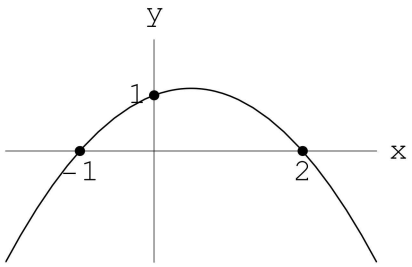
2. For each of the following, complete the square in order to find the vertex.

   (a) $y = x^2 - 40x + 1$

   (b) $y = 2x^2 + 12x + 3$

3. A parabola has its vertex at the point $(2, 3)$ and goes through the point $(6, 11)$. Find a formula for the parabola.

4. Find a formula for the quadratic function shown below. Also find the vertex of the function.



5. A tomato is thrown vertically into the air at time $t = 0$. Its height, $d(t)$ (in feet), above the ground at time t (in seconds) is given by $d(t) = -16t^2 + 48t$.

   (a) Find t when $d(t) = 0$. What is happening to the tomato the first time that $d(t) = 0$? The second time?

   (b) When does the tomato reach its maximum height? How high is the tomato's maximum height?