

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

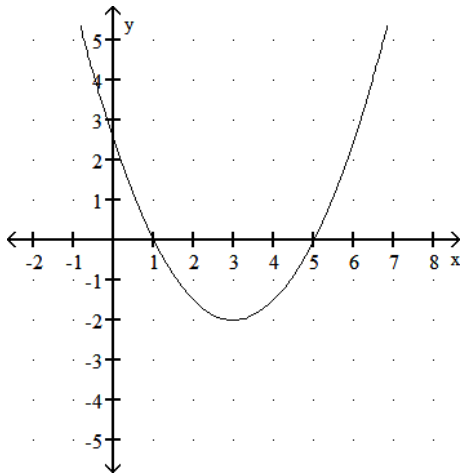
Find the quadratic function $y = f(x)$ that has the given vertex and whose graph passes through the given point.

1) vertex: $(-2, -1)$ passing through: $(1, -19)$

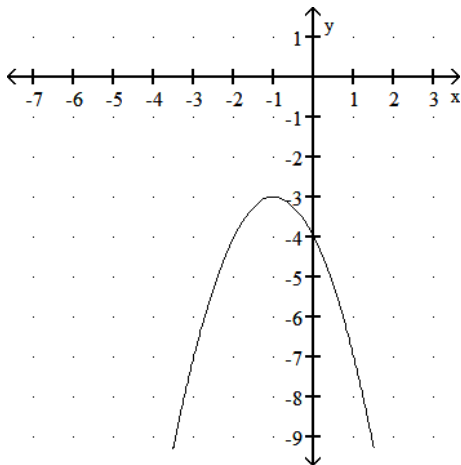
2) vertex $(4, 3)$; passing through $(9, 7)$

The graph of a quadratic function is given. Find the standard form of the function

3)



4)



Write the quadratic function in the standard form $y = a(x - h)^2 + k$.

5) $y = x^2 - 14x$

6) $y = -3x^2 - 24x - 44$

Graph the given function. Identify the vertex and the intercepts.

7) $y = x^2 - 2x - 8$

8) $y = -2x^2 + 12x - 20$

9) $y = -x^2 - 2x - 1$

Solve the problem.

- 10) The length and width of a rectangle have a sum of 74. What dimensions give the maximum area?
- 11) If an object is propelled upward from a height of 80 feet at an initial velocity of 64 feet per second, then its height h after t seconds is given by the equation $h = -16t^2 + 64t + 80$. After how many seconds does the object hit the ground?
- 12) A rock is propelled upward from the top of a building 110 feet tall at an initial velocity of 96 feet per second. The function that describes the height of the rocket in terms of time t is $f(t) = -16t^2 + 96t + 110$. Determine the maximum height that the rock reaches.