2-2 Additional Practice

Standard Form of a Quadratic Function

Find the vertex of a quadratic function written in standard form.

1. $f(x) = 3x^2 + 18x + 32$

Vertex: (−3, 5)

2. $f(x) = x^2 + 2x − 5$

Vertex: (−1, −6)

3. $f(x) = −3x^2 + 18x − 27$

Vertex: (3, 0)

Find the vertex, axis of symmetry, and *y*-intercept of the functions, then sketch the graph.
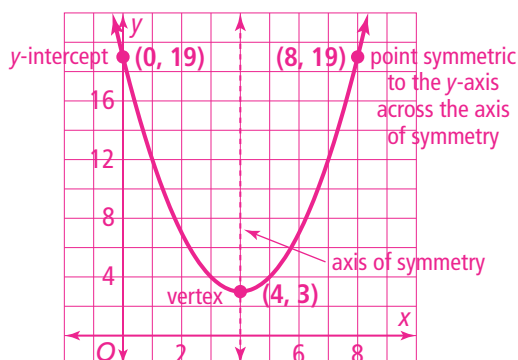
4. $f(x) = x^2 − 8x + 19$

Vertex **(4, 3)**
Axis of symmetry $x = 4$
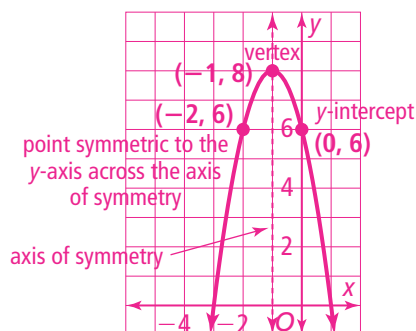*Y*-intercept **(0, 19)**
point symmetric to *y*-axis (8, 19)

5. $f(x) = −2x^2 − 4x + 6$

Vertex **(−1, 8)**
Axis of symmetry $x = −1$
Y-intercept **(0, 6)**
**point symmetric to *y*-axis (−2, 6)**

Interpret the graph of a quadratic function.

6. A small independent movie company determines the profit *P* for producing *n* DVD copies of a recent release is $P = −0.02n^2 + 3.40n − 16$. *P* is the profit in thousands of dollars and *n* is in thousands of units.

a. How many DVDs should the company produce to maximize the profit? **85,000 DVDs**

b. What will the maximum profit be? **$128,500**
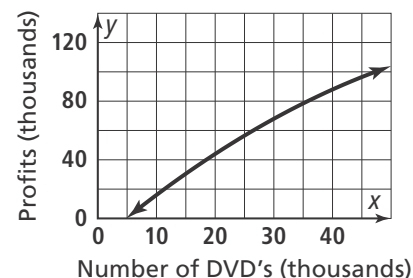
What is the equation of a parabola that passes through the following points?

7. (1, −1), (2, −5), (3, −7)

$f(x) = x^2 − 7x + 5$

8. (2, −8), (3, −8), (6, 4)

$f(x) = x^2 − 5x − 2$

9. (−3, 2), (1, −6), (4, 9)

$f(x) = x^2 − 7$