9-1 Practice

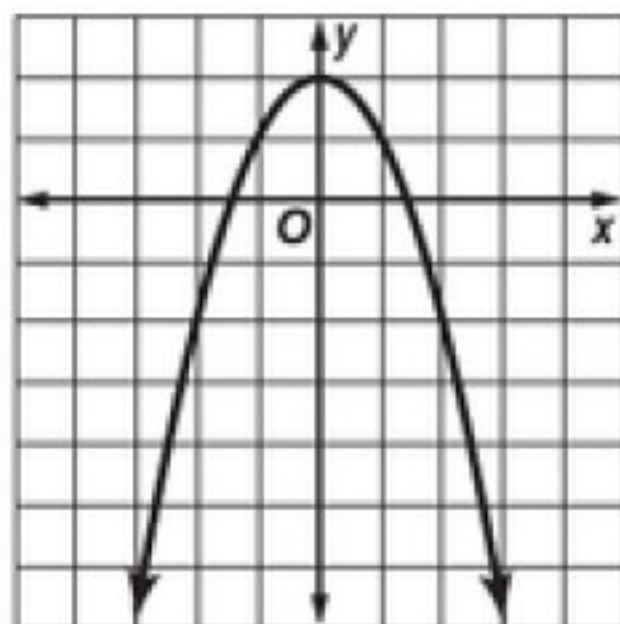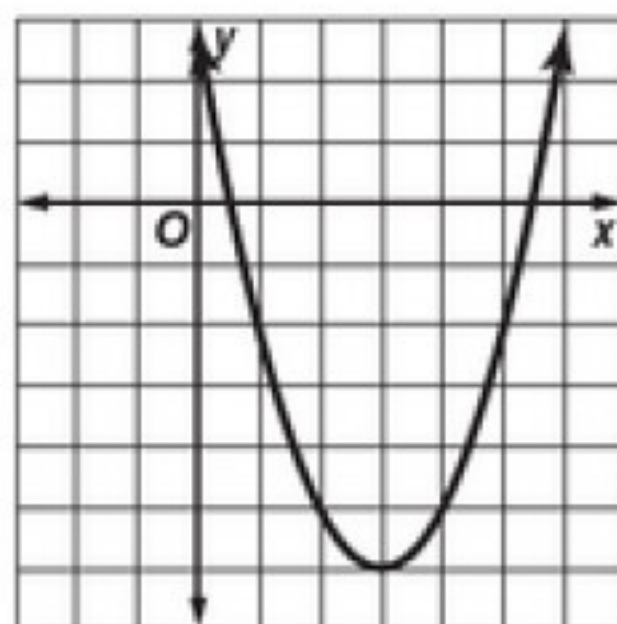### Graphing Quadratic Functions

Use a table of values to graph each function. Determine the domain and range.
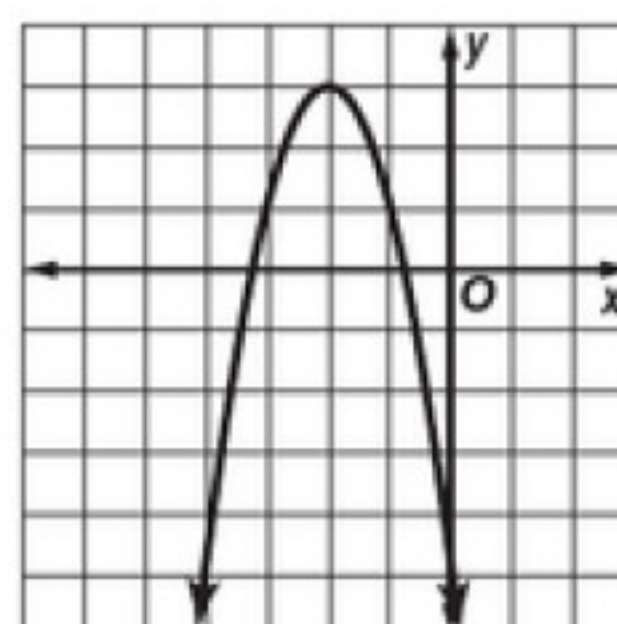
1. $y = -x^2 + 2$

D: {all real numbers}
R: $\{y \mid y \le 2\}$

2. $y = x^2 - 6x + 3$

D: {all real numbers}
R: $\{y \mid y \ge -6\}$

3. $y = -2x^2 - 8x - 5$

D: {all real numbers}
R: $\{y \mid y \le 3\}$

Find the vertex, the equation of the axis of symmetry, and the y-intercept of the graph of each function.

4. $y = x^2 - 9$

$(0, -9); x = 0; (0, -9)$

5. $y = -2x^2 + 8x - 5$

$(2, 3); x = 2; (0, -5)$

6. $y = 4x^2 - 4x + 1$

$(0.5, 0); x = 0.5; (0, 1)$

Consider each equation. Determine whether the function has a *maximum* or a *minimum* value. State the maximum or minimum value. What are the domain and range of the function?

7. $y = 5x^2 - 2x + 2$
min.; (0.2, 1.8);
D: {all real numbers},
R: $\{y \mid y \ge 1.8\}$

8. $y = -x^2 + 5x - 10$
max.; (2.5, -3.75);
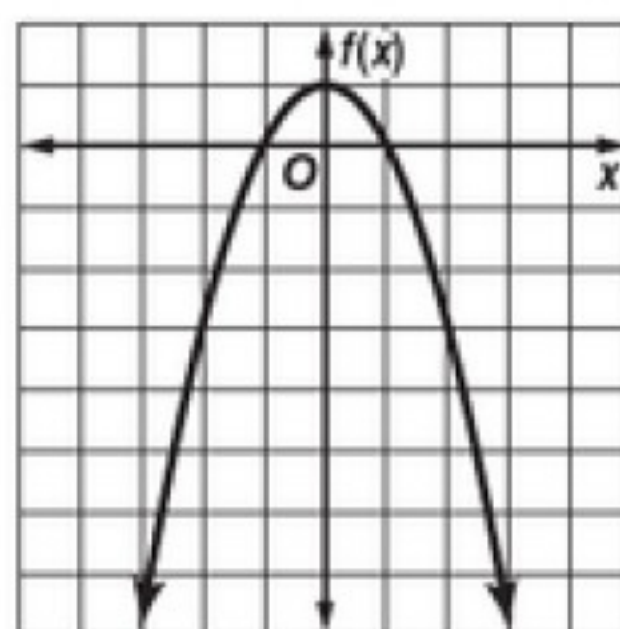D: {all real numbers},
R: $\{y \mid y \le -3.75\}$

9. $y = \frac{3}{2}x^2 + 4x - 9$
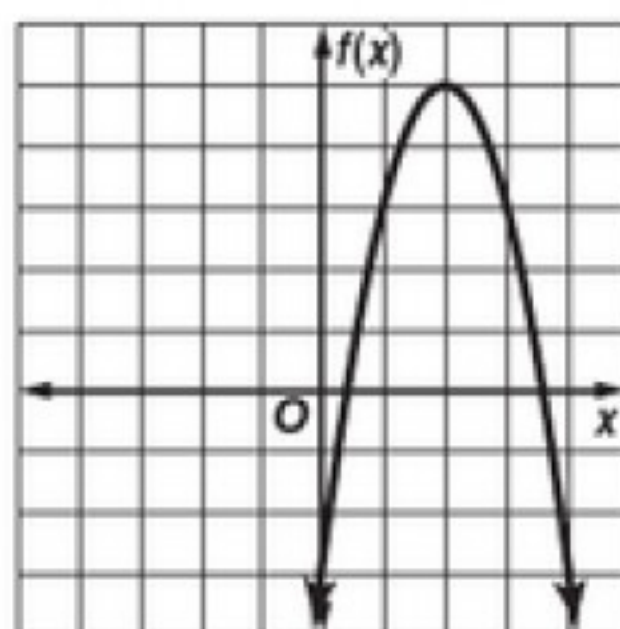min.; $\left(-1\frac{1}{3}, -11\frac{2}{3};\right)$
D: {all real numbers},
R: $\left\{y \mid y \ge -11\frac{2}{3}\right\}$
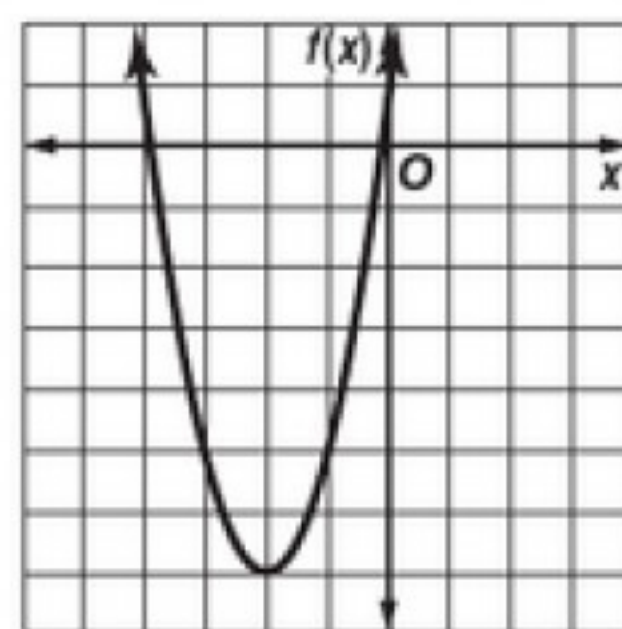
Graph each function.

10. $f(x) = -x^2 + 1$

11. $f(x) = -2x^2 + 8x - 3$

12. $f(x) = 2x^2 + 8x + 1$

13. BASEBALL The equation $h = -0.005x^2 + x + 3$ describes the path of a baseball hit into the outfield, where h is the height and x is the horizontal distance the ball travels.

a. What is the equation of the axis of symmetry? **x = 100**

b. What is the maximum height reached by the baseball? **53 ft**

c. An outfielder catches the ball three feet above the ground. How far has the ball traveled horizontally when the outfielder catches it? **200 ft**