EXERCISES

For more exercises, see *Extra Skill and Word Problem Practice.*

Practice and Problem Solving

A Practice by Example

Example 1 (page 558)

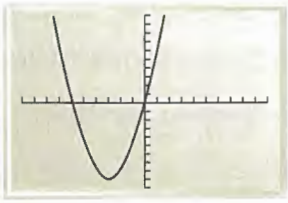
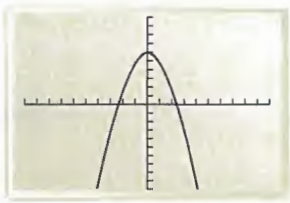
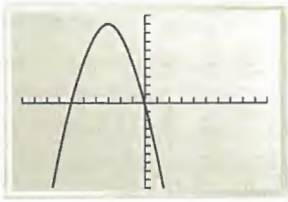
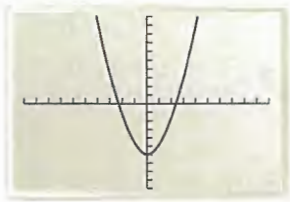
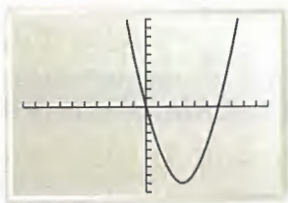
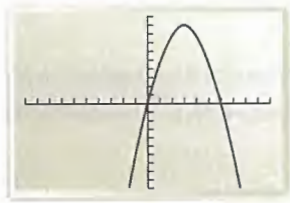
GO for Help

Find the equation of the axis of symmetry and the coordinates of the vertex of the graph of each function.

1. $y = 2x^2 + 4$
2. $f(x) = 2x^2 + 4x - 5$
3. $y = x^2 - 8x - 9$
4. $y = 3x^2 - 9x + 5$

Match each graph with its function.

A. $y = x^2 - 6x$ **B.** $y = x^2 + 6x$ **C.** $y = -x^2 - 6x$
D. $y = -x^2 + 6x$ **E.** $y = -x^2 + 6$ **F.** $y = x^2 - 6$

5. 
6. 
7. 
8. 
9. 
10. 

Graph each function. Label the axis of symmetry and the vertex.

11. $f(x) = x^2 + 4x + 3$
12. $y = 2x^2 - 6x$
13. $y = -x^2 + 4x - 4$
14. $y = 2x^2 + 3x + 1$

Example 2 (page 559)

15. **Gardening** Suppose you have 80 ft of fence to enclose a rectangular garden. The function $A = 40x - x^2$ gives you the area of the garden in square feet where x is the width in feet.
    a. What width gives you the maximum gardening area?
    b. What is the maximum area?

16. A ball is thrown into the air with an upward velocity of 40 ft/s. Its height h in feet after t seconds is given by the function $h = -16t^2 + 40t + 6$.
    a. In how many seconds does the ball reach its maximum height?
    b. What is the ball's maximum height?

Example 3 (page 559)

Graph each quadratic inequality.

17. $y > x^2$
18. $f(x) < -x^2$
19. $y \leq x^2 + 3$
20. $y < -x^2 + 4$
21. $y \geq -2x^2 + 6$
22. $f(x) > -x^2 + 4x - 4$