Name _____ Class _____ Date _____

Practice 10-1

Exploring Quadratic Graphs

Identify the vertex of each graph. Tell whether it is a minimum or a maximum.

1. $y = -3x^2$
2. $y = -7x^2$
3. $y = 0.5x^2$
4. $y = 5x^2$
5. $y = -4x^2$
6. $y = \frac{3}{2}x^2$

Order each group of quadratic functions from widest to narrowest graph.

7. $y = x^2, y = 5x^2, y = 3x^2$
8. $y = -8x^2, y = \frac{1}{2}x^2, y = -x^2$
9. $y = 5x^2, y = -4x^2, y = 2x^2$
10. $y = -\frac{1}{2}x^2, y = \frac{1}{3}x^2, y = -3x^2$
11. $y = 6x^2, y = -7x^2, y = 4x^2$
12. $y = \frac{3}{4}x^2, y = 2x^2, y = \frac{1}{5}x^2$

Graph each function.

13. $y = x^2$
14. $y = 4x^2$
15. $y = -3x^2$
16. $y = -x^2 - 4$
17. $y = 2x^2 - 2$
18. $y = 2x^2 + 3$
19. $y = \frac{1}{2}x^2 + 2$
20. $y = \frac{1}{2}x^2 - 3$
21. $y = \frac{1}{3}x^2 + 5$
22. $y = \frac{1}{3}x^2 - 4$
23. $y = 2.5x^2 + 3$
24. $y = 2.5x^2 + 5$
25. $y = 5x^2 + 8$
26. $y = 5x^2 - 8$
27. $y = -3.5x^2 - 4$

28. The price of a stock on the NYSE is modeled by the function $y = 0.005x^2 + 10$, where x is the number of months the stock has been available.
    a. Graph the function.
    b. What x-values make sense for the domain? Explain why.
    c. What y-values make sense for the range? Explain why.

29. You are designing a poster. The poster is 24 in. wide by 36 in. high. On the poster, you want to place a square photograph and some printing. If each side of the photograph is x in., the function $y = 864 - x^2$ gives the area of the poster available for printing.
    a. Graph the function.
    b. What x-values make sense for the domain? Explain why.
    c. What y-values make sense for the range? Explain why.

30. You are placing a circular drawing on a square piece of poster board. The poster board is 15 in. wide. The part of the poster board not covered by the drawing will be painted blue. If the radius of the drawing is r, the function $A = 225 - 3.14r^2$ gives the area to be painted blue.
    a. Graph the function.
    b. What x-values make sense for the domain? Explain why.
    c. What y-values make sense for the range? Explain why.