NAME _____ DATE _____ PERIOD _____

4–1 Skills Practice

Graphing Quadratic Functions

Complete parts a–c for each quadratic function.

a. Find the *y*–intercept, the equation of the axis of symmetry, and the *x*–coordinate of the vertex.

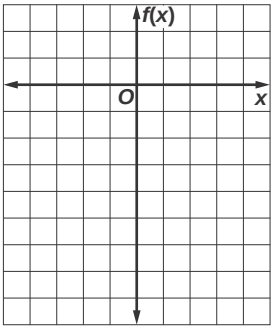
b. Make a table of values that includes the vertex.

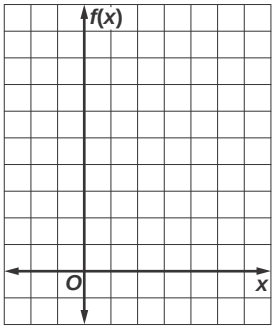
c. Use this information to graph the function.

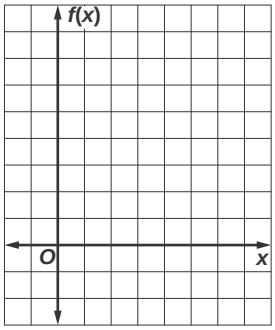
1. $f(x) = -2x^2$

2. $f(x) = x^2 - 4x + 4$

3. $f(x) = x^2 - 6x + 8$







Determine whether each function has a maximum or a minimum value, and find that value. Then state the domain and range of the function.

4. $f(x) = 6x^2$

5. $f(x) = -8x^2$

6. $f(x) = x^2 + 2x$

7. $f(x) = -2x^2 + 4x - 3$

8. $f(x) = 3x^2 + 12x + 3$

9. $f(x) = 2x^2 + 4x + 1$

10. $f(x) = 2x^2 - 11$

11. $f(x) = x^2 - 10x + 5$

12. $f(x) = -2x^2 + 8x + 7$

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4–1 Practice

Graphing Quadratic Functions

Complete parts a–c for each quadratic function.

a. Find the *y*–intercept, the equation of the axis of symmetry, and the *x*–coordinate of the vertex.

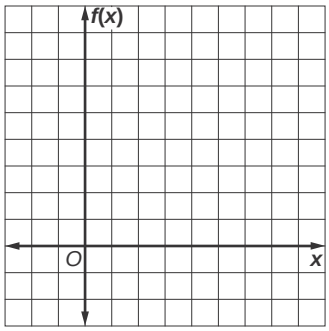
b. Make a table of values that includes the vertex.

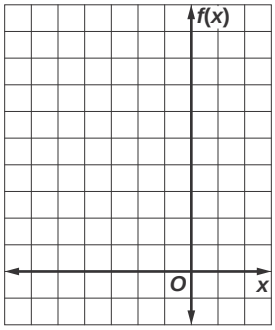
c. Use this information to graph the function.

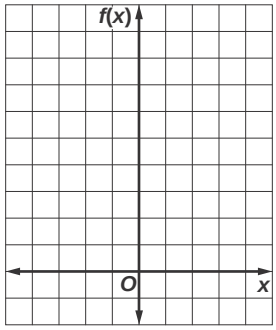
1. $f(x) = x^2 - 8x + 15$

2. $f(x) = -x^2 - 4x + 12$

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







Determine whether each function has a *maximum* or *minimum* value, and find that value. Then state the domain and range of the function.

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

5. $f(x) = x^2 - 6x + 14$

6. $v(x) = -x^2 + 14x - 57$

10. GRAVITATION From 4 feet above a swimming pool, Susan throws a ball upward with a velocity of 32 feet per second. The height $h(t)$ of the ball t seconds after Susan throws it is given by $h(t) = -16t^2 + 32t + 4$. For $t \geq 0$, find the maximum height reached by the ball and the time that this height is reached.

11. HEALTH CLUBS Last year, the SportsTime Athletic Club charged $20 to participate in an aerobics class. Seventy people attended the classes. The club wants to increase the class price this year. They expect to lose one customer for each $1 increase in the price.

a. What price should the club charge to maximize the income from the aerobics classes?

b. What is the maximum income the SportsTime Athletic Club can expect to make?