Name: _____

2.REV.3 – LINEAR & PIECEWISE FUNCTIONS

Past due on: _____ Period: _____

1. A bullet is shot straight up into the air from the ground level. After t seconds, the velocity, v, of the bullet in meters per second is approximated by the formula $v = 1000 - 9.8t$.

   Identify the slope and y-intercept; find the x-intercept. Describe the practical meanings of the slope, y-intercept, and x-intercept in terms of the situation.

   Slope: Meaning:

   y-intercept: Meaning:

   x-intercept: Meaning:

2. Since 1960, the solid waste generated each year in cities across the U.S. has been increasing at a constant rate of 3.8 million tons ever year. In 2000, U.S. cities generated 239.2 million tons of waste. The amount of solid waste, W, is a function of t, the years since 1960.

   Identify WHAT you know:

   What do you NEED to know?

   Find it!

   Write the function in slope-intercept form.

3. A theater manager graphed her weekly profits. One week the profit was $11,328 when 1324 patrons attended. Another week 1529 patrons produced a profit of $13,275.50. The weekly profit, P, is a linear function of the number of patrons, n.

   Identify WHAT you know:

   What do you NEED to know?

   Find it!

   Write the function in slope-intercept form.

4. Bob purchased a cabin for $42,000. That was eight years ago; it was recently appraised at $67,500. The value of the cabin, V, is a linear function of the time since it was purchased (in years), t.
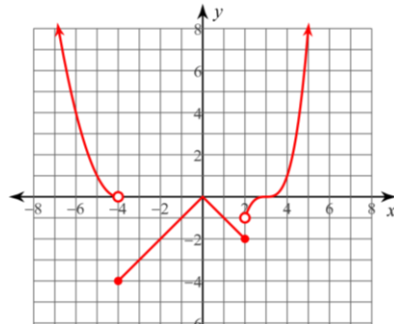
   Identify WHAT you know:

   What do you NEED to know?

   Find it!

   Write the function in slope-intercept form.
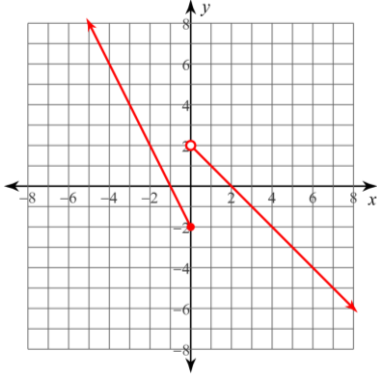
$$g(x) = \begin{cases} (x+4)^2, & x < -4 \\ -|x|, & -4 \le x \le 2 \\ (x-3)^3, & x > 2 \end{cases}$$
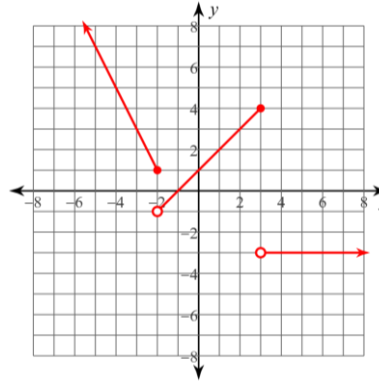

5. Evaluate: $g(-4)$.

6. Evaluate: $g(2)$.

7. Evaluate: $g(6)$.

8. Evaluate: $g(-8)$.

9. Solve $g(x) = 1$.

10. Solve $g(x) = -1$.

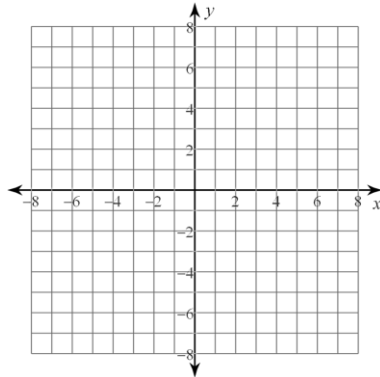Write a function formula for the piecewise function $f(x)$.
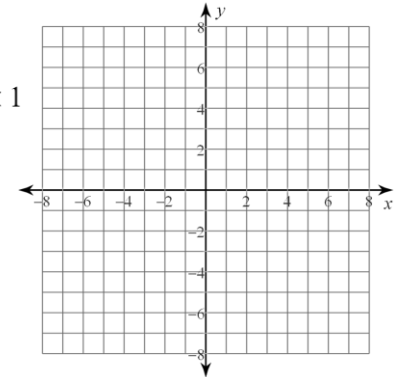
11.

12.

Graph the piecewise function.

13.

$$g(x) = \begin{cases} 2x - 2, & x < 3 \\ x - 1, & x \ge 3 \end{cases}$$

14.

$$g(x) = \begin{cases} -6, & x < -4 \\ -x - 1, & -4 < x < 1 \\ -2x + 4, & x \ge 1 \end{cases}$$

15. A bakery has the following pricing for large orders of cupcakes. The first 100 cupcakes of any order cost $2 each. Each of the next 150 cupcakes only cost $1.75 each. Each cupcake ordered in excess of 250 costs $1.25 each. The total cost, C, is a function of the number of cupcakes ordered, x.

    a. Write a piecewise function for the total cost.

    b. The school orders 15 dozen cupcakes. What is the cost?

    c. A couple orders 450 cupcakes for their wedding. What did they pay?

Chapter 2: Linear Functions