Name: _____ Date: _____

Chapter 3 Prerequisite Skills

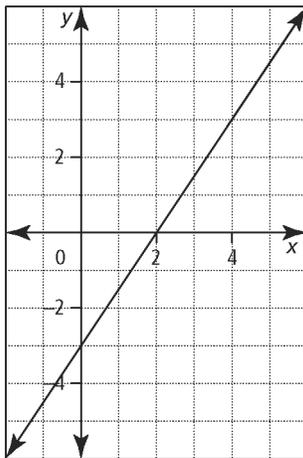**1.** Perform the indicated operations. Simplify each answer.
  a) $7x^2 - 3x + x^2 - x$
  b) $(4x - 3)(x + 7)$
  c) $(2x - 5)^2$
  d) $(x - 1)^2 - (2x + 3)(x - 4)$

2. Use the graph to help answer the following questions.

  a) What is the value of the y-intercept?
  b) What is the slope of the line?
  c) What is the equation of the line using the form $y = mx + b$?
  d) What is the range of the linear function shown on the graph?
  e) What is the x-intercept?

3. If $m = -\dfrac{2}{5}$ and $(1, 4)$ is a point on the line, what are the coordinates of another point on the line that is in the fourth quadrant?

4. Determine the equation of a line that satisfies the following conditions. Leave each answer in the form $Ax + By + C = 0$
  a) The line has a slope of $-\dfrac{3}{4}$ and a y-intercept of 2.
  b) The line passes through the points $(-1, 0)$ and $(2, -6)$.

5. Write each equation in the form $y = mx + b$. Give the value of the slope and y-intercept.
  a) $3x + y - 4 = 0$ **b)** $3x - 7y = 1$
  c) $3x - 4y = 0$

6. For each equation, write it in the form $Ax + By + C = 0$, where A, B, and C are integers. Give the values of A, B, and C.
  a) $y = -5x + 2$ **b)** $y = \dfrac{2x}{3} - 7$
  c) $-1 = 4y - \dfrac{3}{4}x$

7. A linear function is expressed as $g(x) = 3x - 8$.
  a) If you were to draw a graph of function g, how should you label the axes?
  b) What is the value of $g(-2)$?
  c) Is the point $A(5, 7)$ on the graph of function g? Explain how you know.
  d) What is the domain of function g?

8. Determine the value of each expression.
  a) one half of 6 squared
  b) one half of -9 squared
  c) one half of $\dfrac{7}{2}$ squared

9. What is the degree of each polynomial?
  a) $6x - 3y + 1$ **b)** $2x^2 - 3x^2y - 7y$
  c) $5x^2 - 10 + 3y^2$

10. For each function, create a table of values using only integral values, sketch the graph, and state the value of the y-intercept.
  a) $3x - y - 1 = 0$ **b)** $-2x + 3y = 6$

11. An ecologist investigating the effect of air pollution on plant life finds the percent $p(x)$ of diseased plants at a distance x kilometres from an industrial site is defined by the function $p(x) = 40 - \dfrac{3x}{50}$ for $50 \le x \le 200$.
  a) Sketch a graph of function p. Title the axes and give the graph a title.
  b) What is the value of each of the following: $p(50)$, $p(150)$, and $p(200)$?
  c) What is the range of function p?