Math 35: Chpt 4-5 Review

1. Graph the ordered pairs and name the quadrant each point is in.
   (3,4); (-4,-3); (-1,2,3); (5, -2); (-5/3, 16/13)

2. Find the x-intercept, y-intercept and slope, then graph each equation.
   a. 3x - 6y = 12
   b. y = -6
   c. 8x -15y = -40
   d. x=3
   e. 5x-2y=10
   f. $y = -\frac{2}{3}x$
   g. $y = -\frac{1}{4}x + 7$

3. Convert the following equations in standard form to slope-intercept form:
   a. 3x -4y = -16
   b. 8x -15y = -40
   c. 3x - 6y = 12

4. Find the equation of the line that is perpendicular to $2x + 3y = 12$ and passing through (-3,4).

5. Find the of the line that is parallel to $2x + 3y = 12$ and passing through (-3,4).

6. Find the slope of a line passing through the points (2,4) and (-1,7).

7. Write an equation for a line passing through (2,4) and (-1,7).

8. The function $S(t) = 139+25t$ can be used to estimate the total annual sales for “Clean & Clear” windshield wiper fluid. $S$ is in thousands of dollars and $t$ is in years. Predict the total sales of “Clean & Clear” windshield wiper fluid in 2010.
9. If you rent a car for one day and drive it 350 miles, the cost is $75. If you drive a car 500 miles, the cost is $90. Let \( C(m) \) represent the cost, in dollars of driving \( m \) miles. (Hint: give two ordered pairs that represent this situation and go from there)
   a. Find the linear equation that describes this data.
   b. Use the function to determine how much it will cost you to rent the car for one day and drive it 250 miles.

10. Are the following sets of graphs parallel, perpendicular or neither?
   a. \( 3x - 6y = 12 \) and \( 2y + 4x = 10 \)
   b. \( 2y - 8x = -6 \) and \( y - 4x = 1 \)
   c. \( x - y = 2 \) and \( x - 2y = 2 \)

11. Graph the following linear inequalities:
   a. \( x + y \geq -4 \)
   b. \( 2x - y > 8 \) or \( x + 2 \geq 6 \)

12. Determine whether the following relations are functions or not. State the domain and range of each.
   a. \{(-2,7); (3,-7); (6,4); (10,1)\}
   b. \{(-6,2); (-1,-6); (-1, -1); (-1,7)\}

13. Find the domain of each function:
   a. \( f(x) = \frac{1}{x - 7} \)
   b. \( f(x) = x^2 + 3 \)
   c. \( f(x) = \frac{1}{2} x + 5 \)

14. Determine whether the following graphs are functions.
   a. 
   b. 
   c. 
   d. 

15. Evaluate each function at the given point.
   a. \( f(x) = 5x - 2 \) \( f(-7); f(0); f(-1) \)
   b. \( g(x) = x^2 - 2x - 4 \) \( g(1); g(0) \)

16. Write the following equations in function notation.
   a. \( 5x + y = 5 \)
   b. \( 9x = 7y + 6 \)

17. Solve each of the systems of equations using substitution:
   a. \[
   \begin{align*}
   x &= y - 4 \\
   2x + 3y &= 7
   \end{align*}
   \]
   b. \[
   \begin{align*}
   x &= -2 - 3y \\
   -2x - 6y &= 4
   \end{align*}
   \]
   c. \[
   \begin{align*}
   0.1x + 0.2y &= 1.1 \\
   2x - y &= 2
   \end{align*}
   \]

18. Solve each of the systems of equations using elimination:
   a. \[
   \begin{align*}
   x + y &= -2 \\
   2x + 3y &= -3
   \end{align*}
   \]
   b. \[
   \begin{align*}
   2x - 3y &= 5 \\
   6x &= 9y + 18
   \end{align*}
   \]
   c. \[
   \begin{align*}
   x + \frac{1}{2}y &= 7 \\
   -2x - 3y &= -6
   \end{align*}
   \]

19. Solve each of the systems of equations:
   a. \[
   \begin{align*}
   x + y + z &= 6 \\
   x - y - z &= -4 \\
   -x + y - z &= -2
   \end{align*}
   \]

20. Tests of an anti-bacterial face-wash cream showed that a mixture containing 3% Triclosan gave the best results. In your bathroom you have some face-wash cream with 2% Triclosan and some other face-wash cream with 7% Triclosan. How many grams of each cream should be mixed together to get 185 grams of face-wash cream with 3% Triclosan?

21. A retired couple invested part of $12,000 at 6% interest and the rest at 7.5% interest. If their annual income from these investments is $810, how much was invested at each rate?

22. According to the Pet Industry Joint Advisory Council, as of 1998, there were an estimated 124 million dogs and cats in the United States. If there were 8 million more cats than dogs, how many of each type of pet were there in 1998?

23. Evaluate using the rules of exponents.