Linear Functions:
From Graphing Points to Linear Equations and Beyond!!
A Summative Exam

1. Define the following terms in your own words:

   A. Cartesian coordinate system

   B. Ordered pair

   C. Solution to an equation

2. Plot the following ordered pairs on the Cartesian coordinate system and name the quadrant or axis where each point is located.

   Quadrant

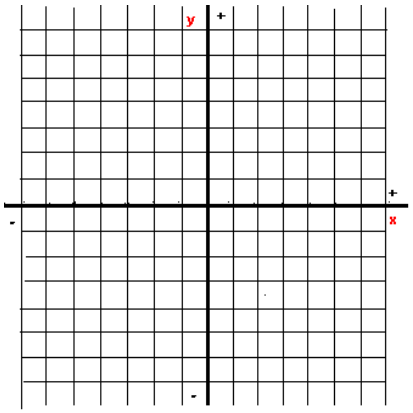
   _____ A. (5, 2)

   _____ B. (-3, -4)

   _____ C. (-6, 5)

   _____ D. (3, 0)

   Plot



3. Determine which of the ordered pairs is a solution for the given equation. Show work to support your answers. Place Yes or No in the space provided.

   $3x - y = 12$

_____ a) $(5, 3)$ _____ b) $(-3, -3)$ _____ c) $(0, -12)$

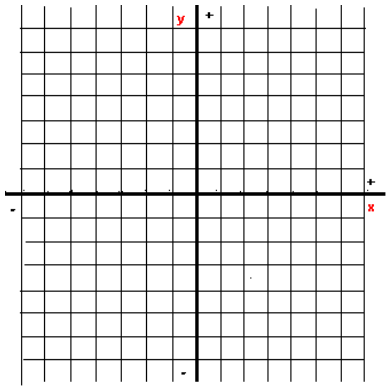
4. In the following problems, complete the ordered pairs so that each is a solution for the given equation.

$x + 2y = 8$ $\quad (2, \quad), \quad (\quad , 0), \quad (\quad , -3), \quad (-4, \quad)$

a) $(2, \_\_\_\_\_)$ $\qquad$ b) $(\_\_\_\_\_, 0)$

c) $(\_\_\_\_\_, -3)$ $\qquad$ d) $(-4, \_\_\_\_\_)$

5. Now, graph the equation $x + 2y = 8$ by plotting points. Please make a t-table for the ordered pairs.



6. Define the following terms in your own words:

   a. Linear equation

   b. *x*-intercept

   c. *y*-intercept

   d. Slope

7. Determine if the following equations are linear or non-linear. Place L in the space for linear and N for non-linear. Describe why or why not.

_____ a. $3x + 2y = 5$

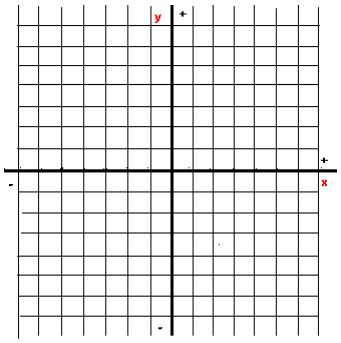
_____ b. $\frac{4}{x} + 6y = -2$

_____ c. $y = -7x + 3$

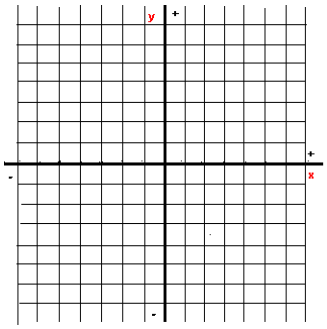
_____ d. $x + y^2 + 2 = -1$

8. Find the *x*-intercept and *y*-intercept and graph the following equations.

a. $3x + 4y = 12$



b. $y = 2x$



9. Define the following terms in your own words:

a. Linear function

b. Domain

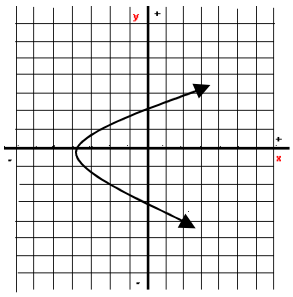
c. Range

10. Determine if the following relations are functions by using the method most appropriate: domain and range, vertical line test, or plotting points. Place F in the space provided if the relation is a function, place N if the relation is not a function.

_____ a. $3x + 2y = 6$

_____ b. $\{(1,3),(6,3),(1,4),(5,7)\}$

_____ c.

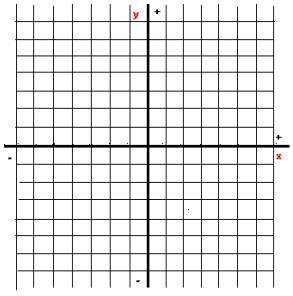


_____ d. $x = 2y^2$

11. Graph the following functions using the method described.

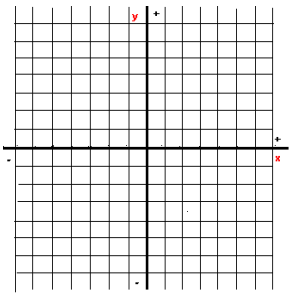
a) Use ordered pairs to graph the following function.

$f(x) = 3x + 2$



b) Write the following equation in function notation and then find the *x*-intercept and *y*-intercept to graph the function.

$x + 3y = -3$



12. Find the slope of the line through the given pair of points.

$(-3, -1)$ and $(2, -4)$ m = _____

13. Find the slope and *y*-intercept for each of the given equations.

a) $4x - 5y = -10$ m = _____

b = _____

b) $y = \frac{7}{3}x + 4$ m = _____

b = _____

14. Determine whether the two lines are parallel, perpendicular, or neither.

$x - 3y = 12$ $3x + y = 2$

Answer: _____

In the following problems, write the equation of the line in slope-intercept form.

15. Write the equation of the line given the following information:

$m = \frac{3}{4}$, $b = -3$

Equation: _____

16. Write the equation of the line given the following information:

point $(-3, -4)$ with a slope of $-\frac{1}{3}$.

Equation: _____

17. Write the equation of the line given the following information:

points $(1, -5)$ and $(4, 4)$.

Equation: _____

Extra Credit:

Write the equation of the line that is perpendicular to the line $4x - 5y = 8$ through the point $(0, -3)$.

Equation: $y = -\frac{5}{4}x - 3$