Instructions: *Put you name at the top of the page in the blank provided. Show all of your work clearly and box your final answer. You may use the back of the page to show extra work, as long as you label it clearly. Show all work at all times. Word problems need to show setup, equations using algebra and be solved using algebra (don't forget units). You may not use a calculator. Good luck!*

1. For the equation: $-3 + 3y = -4x$

    a) Put the equation in slope-intercept form. Remember that is solving for one of the variables.

    b) On the line provided, give the slope.   m = _____
    Indicate how you arrived at this answer here.

    c) On the line provided, give the y-intercept as an ordered pair. _____

    d) On the line provided, give the x-intercept as an ordered pair. _____
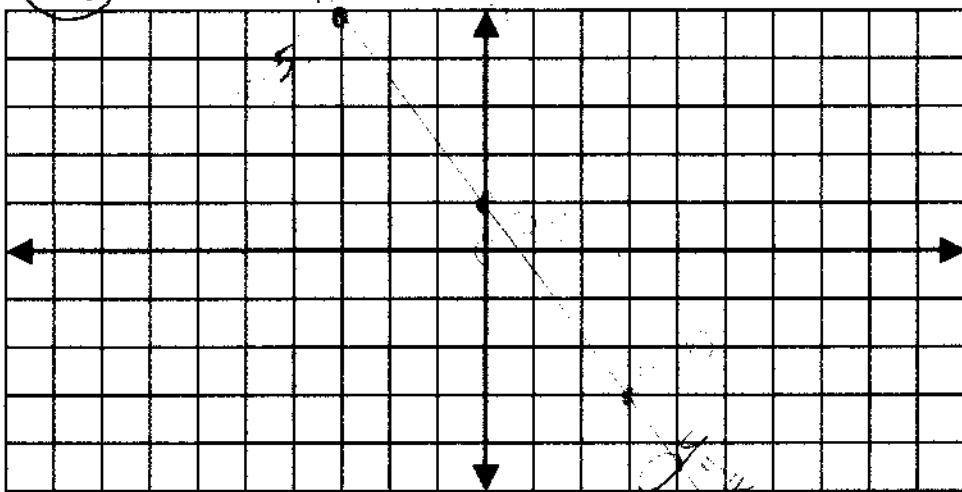   Show the work in getting the x-intercept in the space provided.

    Work +1

    e) On the line provided, give a third, integer, ordered pair solution. _____
    Show the work in obtaining this solution in the space provided. It may not be done using the graph, substitution and solving of an equation must be used.

    Fits +½
    Integer +½

    Work +1

    f) Using 3 points, graph the line on the coordinate system below. Don't forget to label your 3 points, put arrows on the line and label the line.

    3 points +1½
    Slope +½
    Pts. make line +½
    Arrows +½
    Label +½

2. Which of the following is a vertical line? (Circle the best answer. Circle only one.)

   a) $x = 5$ b) $y = 3x$ c) $2x = 3y - 5$ d) $5y = 9$

(handwritten left margin: $-+1$)

3. Which ordered pair lies on the horizontal line $2y = {}^9/_2$?
   (Circle the best answer. Circle only one.)

   a) $(2, {}^9/_4)$ b) $(2, {}^9/_2)$ c) $({}^9/_4, 2)$ d) $(9, 2)$

(handwritten left margin: $+1$)

4. Which is the slope of a vertical line? (Circle the best answer. Circle only one.)

   a) No slope   b) Zero   c) Undefined   d) Null Set

(handwritten left margin: $+1$)

6. Lines which are parallel have _____ slope(s). (Circle
   the best answer to fill in the blank. Circle only one.)

   a) different   b) negative reciprocal   c) the same

(handwritten left margin: $+1$)

7. Which line is perpendicular to the line $2x - 3y = 9$?
   (Circle the best answer. Circle only one.)   *work +1*

   a) $3x - 2y = -9$ $-2y = -3x - 9 \Rightarrow y = \frac{3}{2}x + \frac{9}{2}$ b) $y = {}^3/_2x$

   c) $y = -{}^3/_2x - 4.5$ d) $y = {}^2/_3x + 1$

   Agrees w/ work $+\frac{1}{2}$

(handwritten left margin: $+2$)

8. Which is the equation of a line with zero slope?
   (Circle the best answer. Circle only one.)

   a) $x = 5$ b) $y = 3x$ c) $2x = 3y - 5$ d) $5y = 9$

(handwritten left margin: $-+1$)

9. For $g(x) = x^2 - x - 1$ find $g(-3)$ *Substitutes +1* $-\frac{1}{4}$ $+\frac{1}{2}$ $+\frac{1}{2}$

(handwritten left margin: $+2\frac{1}{2}$)

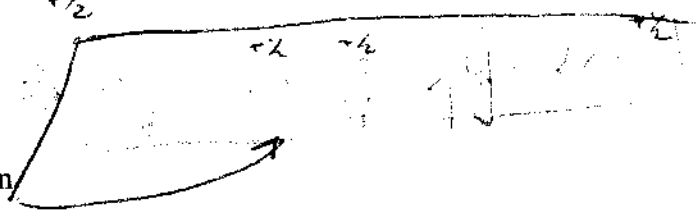**10.** State whether the following **is or is not** a function (state reasons).

   a) $+1$ $\{(0,2),(5, 2),(3, 2)\}$ *Yes All x's unique*

   b) $+1$ 2→6 3→7 4→ 5→9   *No 2 (9)*

(handwritten left margin: $+2$)

11. Give the equation of the line passing through the points $(1,-3)$ and $(-4, 7)$.
   Full credit will not be given unless you use the point-slope form, and show all work as outlined below.

   a) $\frac{1}{2}$ Show your work for finding the slope. $+\frac{1}{2}$

   $\frac{y}{x} \cdot \frac{2}{2}$ $+1$

   b) $+1\frac{1}{2}$ Plugging into the point-slope form   *Substitutes in $+1\frac{1}{2}$* $+\frac{1}{2}$ $+\frac{1}{2}$ $+\frac{1}{2}$

   c) $+1\frac{1}{2}$ Give the final equation in slope-intercept form

(handwritten left margin: $-5\frac{1}{2}$)

Y. Butterworth   Math 11a Fall09   2-3b $+17$

12. <u>Solve</u> the linear inequalities in 1 variable and <u>graph</u> them on a *number line*. Give each solution set in <u>interval notation</u>.
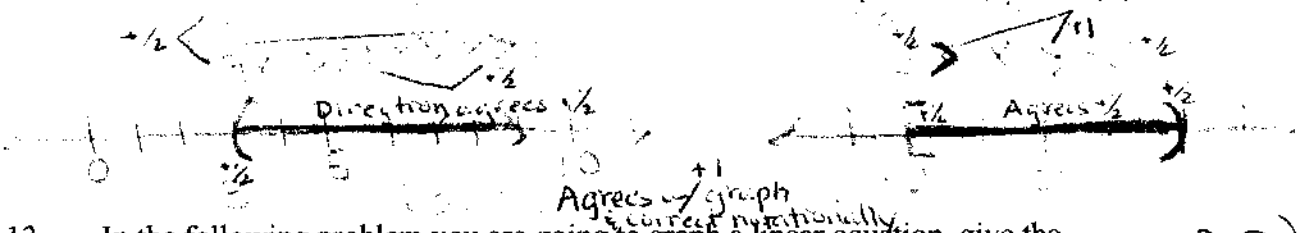
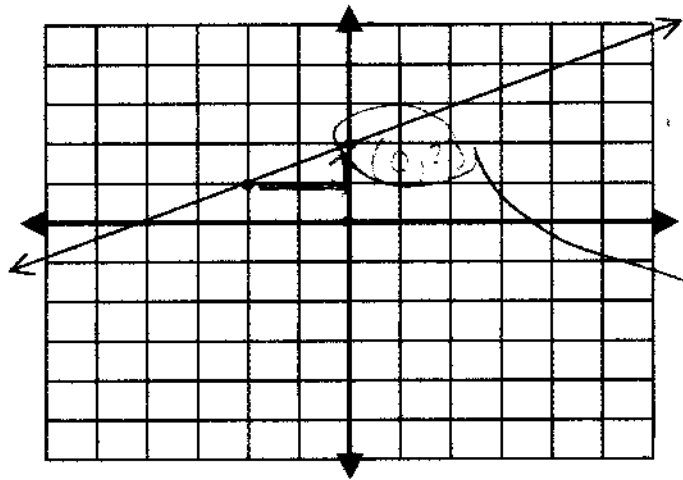a) $4(x + 2) - 8 > 15 - 3(x - 2)$

b) $-1 < -3x + 5 \leq 11$

13. In the following problem you are going to graph a linear equation, give the equation of a line that is shown on a graph and give the solution to the system created by the pre-graphed line and the line that you graph.

a) On the line provided, give the equation for the line shown in the graph below. Show your work in arriving at that equation. _____

14. Circle the correct answer in standard notation [the answers follow each part as i), ii), etc.]:

a) 1.02×10^{-4} i) -10200   ii) 0.000102   iii) 0.0000102   iv) 10200

b) -1.25×10^6 i) -0.00000125   ii) -0.000000125   iii) -1,250,000   iv) -125,000,000

15. Write in correct scientific notation:

a) -0.0552

b) 9,250,000

16. Multiply using exponents rules & write in correct scientific notation. Do not multiply in standard form.

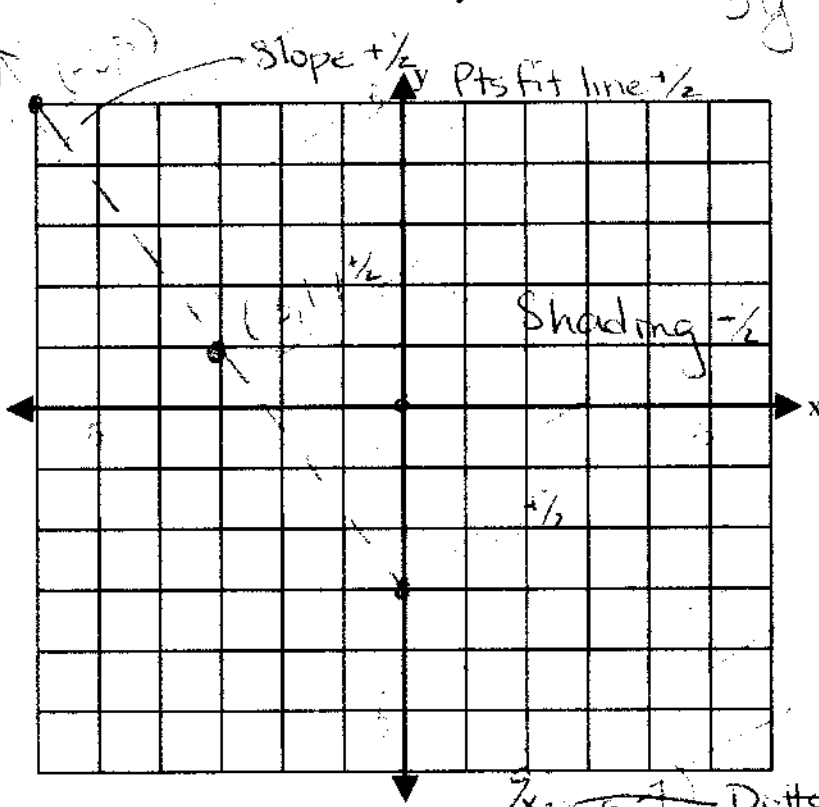$$(1.2 \times 10^7)(9 \times 10^{-2})$$

17. Find the quotient and write your answer using correct scientific notation.

$$\frac{(25.2 \times 10^4)}{(2.1 \times 10^{-3})}$$

a) 1.2×10^{-2} b) 12×10^2 c) 1.2×10^3 d) 1.2×10^2

18. Solve the linear inequality in two variables. Show your work for a <u>checkpoint</u> <u>above</u> and <u>below</u> the boundary line. Do show **2 points** labeled that you used to **graph the boundary** line.

$$9 + 3y > -4x$$

19. Multiply. $(x - 1)(4x^2 - 2x - 1)$

a) $4x^3 - 6x^2 - x + 1$ b) $4x^3 + 2x^2 + x + 1$

c) $4x^3 - 2x^2 + x + 1$ d) $4x^3 - 6x^2 + x + 1$

20. Divide. Be Careful. $(-12x^3y^3 - 16x^5y^4 + 20xy) \div (-4xy)$

a) $4x^4y^3 + 3x^2y^2 - 5$ b) $4x^4y^3 + 3x^2y^2 - 20xy$

c) $-4x^4y^3 - 3x^2y^2 + 5$ d) $4x^6y^5 + 3x^4y^4 - 5x^2y^2$

21. Divide.
$$\frac{2a^3 - 3a^2 + 8a + 6}{2a + 1}$$

a) $a^2 - 2a + 5 + \dfrac{1}{2a + 1}$

b) $a^2 - 2a + 6$

c) $a^2 - a + 5 + \dfrac{1}{2a + 1}$

d) $a^2 - a + 6$

22. Simplify each of the following using exponent rules. Do not leave any negative exponents or numbers raised to powers.

a) $(5x^3y^5)(2x^4y)$

b) $(-3x^4y)^3$

c) $2x^{-2}$

d) $6x^0 - (7x^3)^0$

e) $\dfrac{-4xy^7}{24x^3y^4}$

$\left(\dfrac{5x^5yz^{-2}}{3x^3y^3z^2}\right)^2 = \left(\dfrac{5x^2}{3\,y^2z^4}\right)^2 = \dfrac{25x^4}{9\,y^4z^8}$