

Practice Exam #2
Math 40 - Elementary Algebra

1. Solve the equations. You do not need to check it.

a. $2(5x-3)-2x+4=5-(6x+1)$

$$10x - 6 - 2x + 4 = 5 - 6x - 1$$

$$8x - 2 = -6x + 4$$

$$8x = -6x + 6$$

$$+6x \quad +6x$$

$$14x = 6$$

$$14x = 6$$

$$x = \frac{6}{14}$$

$$x = \frac{3}{7} \quad \text{reduce!}$$

b. $2(4x-1)=4(2x+3)$

$$8x - 2 = 8x + 12$$

$$+2$$

$$8x = 8x + 14$$

$$-8x \quad -8x$$

$$0 \neq 14$$

No solution!

2. Find y when $x = 4$

$$x^2 = -4y + \frac{7}{2}x$$

$$(4)^2 = -4y + \frac{7}{2}(4)$$

$$16 = -4y + 14$$

$$16 = -4y + 14$$

$$-14$$

$$2 = -4y$$

$$\frac{2}{-4} = y$$

$$-\frac{1}{2} = y$$

$$y = -\frac{1}{2}$$

3. Solve the formula for the indicated variable

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

$$-3x \quad -3x$$

$$2y = -3x + 6$$

$$y = -\frac{3}{2}x + \frac{6}{2}$$

$$y = -\frac{3}{2}x + 3$$

b. $vt-16t^2=h$ for v

$$vt - 16t^2 = h$$

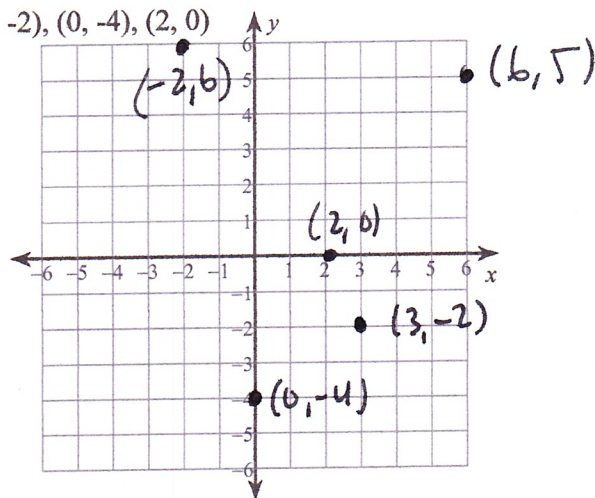
$$+16t^2 \quad +16t^2$$

$$\frac{vt}{t} = \frac{h + 16t^2}{t}$$

$$v = \frac{h + 16t^2}{t}$$

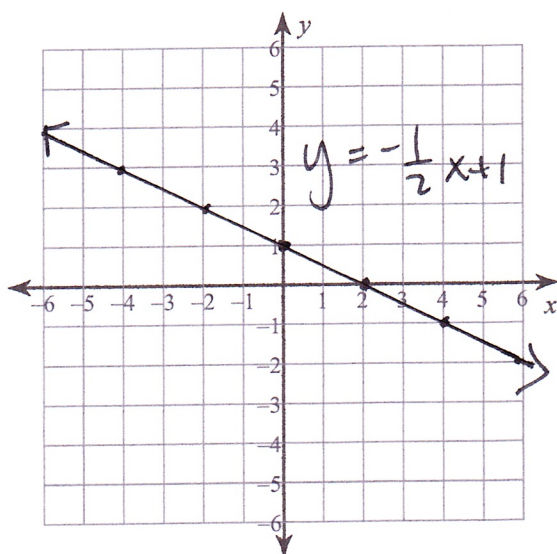
4. Plot the following points on the axis: $(6, 5)$, $(-2, 6)$, $(3, -2)$, $(0, -4)$, $(2, 0)$

Label
pts on
graph!



5. Graph the following linear equation using one of the three methods learned in class.

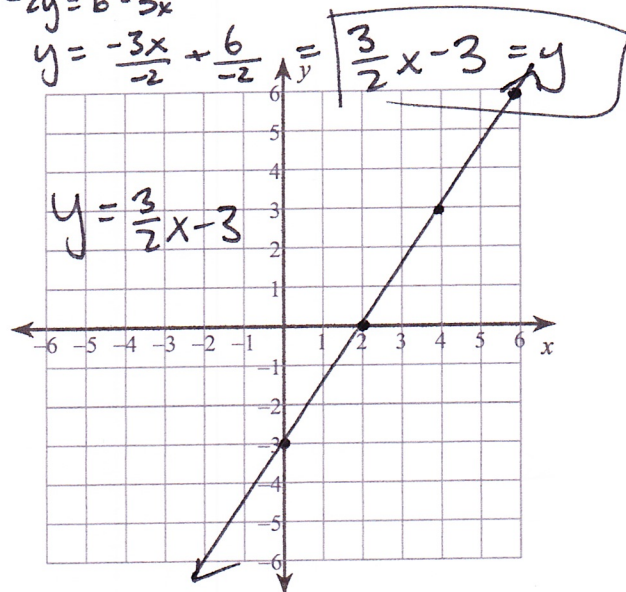
a. $y = -\frac{1}{2}x + 1$ $m = -\frac{1}{2}$ $(0, 1)$



b. $3x - 2y = 6$ $m = \frac{3}{2}$ $(0, -3)$

$-2y = 6 - 3x$

$y = \frac{-3x + 6}{-2} = \frac{3x}{2} - 3$



6. Find the equation of the line through $(0, -9)$ with slope $m = -\frac{3}{2}$

$b = -9$

$m = -\frac{3}{2}$

$y = mx + b$

$m = \text{slope}$

$b = y \text{ coordinate of } y \text{ intercept}$
 $(0, b)$

$y = -\frac{3}{2}x - 9$

7. Given the two points $(-3, 7)$ and $(6, 1)$

a. Determine the whole equation of the line in slope-intercept form that passes through the points. Use slope formula!

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{1 - 7}{6 - (-3)}$$

$$= \frac{-6}{9} = -\frac{2}{3}$$

$$y - 1 = -\frac{2}{3}(x - 6)$$

$$y - 1 = -\frac{2}{3}x + \frac{2}{3}(\frac{6}{1})$$

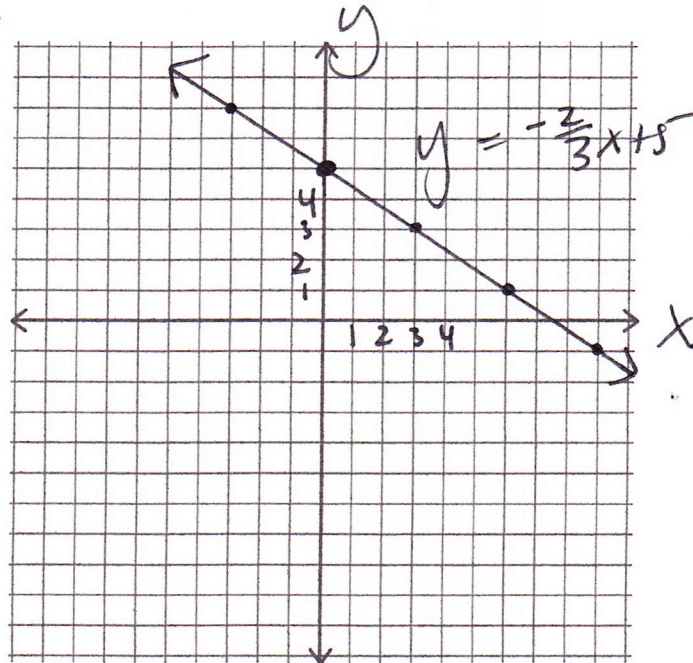
$$y - 1 = -\frac{2}{3}x + 4$$

$$+1 \quad +1$$

$$\boxed{y = -\frac{2}{3}x + 5}$$

b. Accurately graph the equation found in part a. above by using the slope and y intercept or plotting points or plotting both of the intercepts (Be sure to label and scale the axes).

Use slope & yint.
or plot given points.



8. Determine the SLOPE of the line

a. parallel to $4x - 5y = 11$

$$-5y = -4x + 11$$

$$y = \frac{4}{5}x - \frac{11}{5}$$

$$m_1 = \frac{4}{5} = m_2$$

b. perpendicular to $2y + 4x = -28$

$$2y = -4x - 28$$

$$y = -\frac{4x}{2} - \frac{28}{2}$$

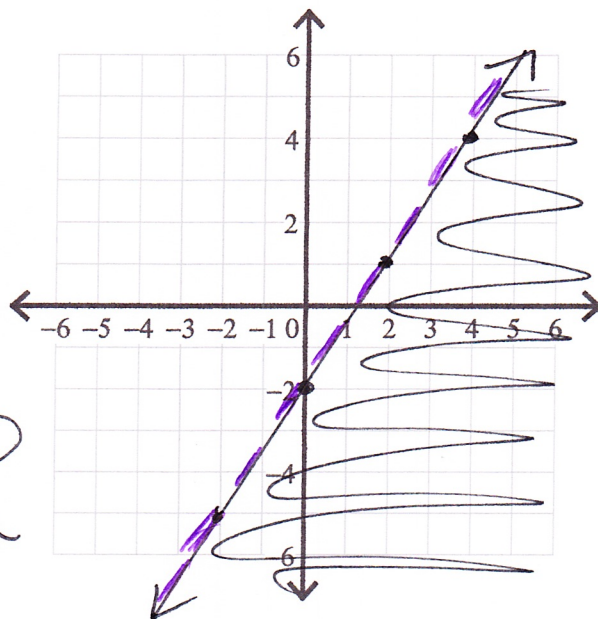
$$y = -2x - 14$$

Opposite reciprocals (perpend.)

$$m_1 = \frac{2}{1} \quad m_2 = \frac{1}{2}$$

10. Graph the following two-variable inequality. Shade the graph in the appropriate area to represent the solution. Pick a test point if need be.

$$\begin{aligned}
 3x - 2y &> 4 \\
 -3x &\quad -3x \\
 -2y &\geq -3x + 4 \\
 y &< -\frac{3}{2}x + \frac{4}{-2} \\
 y &< \frac{3}{2}x - 2 \\
 &\text{Shade below} \\
 &\text{dashed line}
 \end{aligned}$$



11. Determine whether the ordered pair $(-3, 4)$ is a solution to the system. You do not need to solve, just check and use proper notation.

$$\begin{aligned}
 x + y &= 1 \\
 x - y &= -5
 \end{aligned}$$

plug in $x = -3$ & $y = 4$
to BOTH equations

Check: $x = -3$ $y = 4$

$$x + y = 1$$

$$-3 + 4 = 1$$

$$1 = 1 \checkmark$$

Go to here!

Check: $x = -3$ $y = 4$

$$x - y = -5$$

$$(-3) - (4) = -5$$

$$-7 \neq -5$$

$(-3, 4)$ is not a solution since it is not a solution to the second equation.

12. Solve the following system using ALL three methods and classify as

consistent or inconsistent.

$$4y = 5x + 8$$

$$5x - 4y = 12$$

a. graphically

$$4y = 5x + 8$$

$$y = \frac{5}{4}x + 2$$

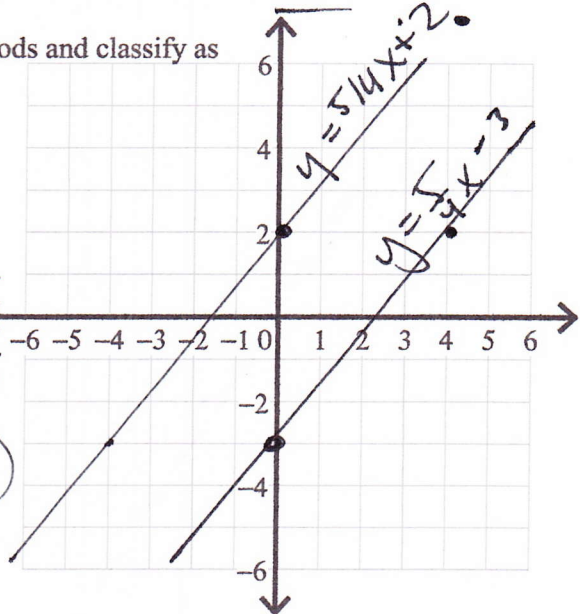
$$5x - 4y = 12$$

$$-4y = -5x + 12$$

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

b. substitution or elimination/addition

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



$$\begin{aligned} 5x + 4y &= 8 \\ 5x - 4y &= 12 \end{aligned}$$

$$0 = 20$$

No solution

13. Solve the following system

$$3y = x + 6$$

$$y + 2 = -x$$

using all three methods and classify as

consistent or inconsistent.

a. graphically

$$y = \frac{1}{3}x + 2$$

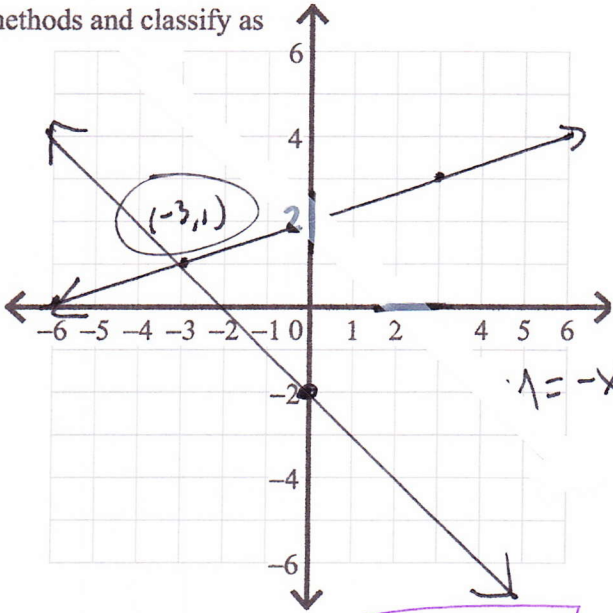
$$m = \frac{1}{3} (0, 2)$$

$$(-3, 1)$$

$$y = -x - 2$$

$$m = -1$$

$$(0, -2)$$



b. substitution

$$y + 2 = x$$

$$y = -x - 2$$

$$3(-x - 2) = x + 6$$

$$-3x - 6 = x + 6$$

$$-3x = x + 12$$

$$-4x = 12$$

$$x = -3$$

$$y + 2 = x$$

$$y + 2 = -3$$

$$y = -5$$

$$(-3, 1)$$

put in standard form

c. elimination/addition

$$3y - x = 6$$

$$y + x = -2$$

$$4y = 4$$

$$y = 1$$

subst.

$$1 + 2 = -x$$

$$3 = -x$$

$$x = -3$$

$$(-3, 1)$$