Algebra 2 CP Name KEY

Midterm REVIEW 2016-17 (Chapters 1-4)

Evaluate each using the values given.

1) $y \cdot x \div 3 - x^2$; use $x = -3$, and $y = -3$

$(-3)(-3) \div 3 - (-3)^2$

$9 \div 3 - (9)$

$3 - 9 =$

-6

Simplify. Write in standard form.

2) $-6(10x - 3) + 5(3x - 7)$

$-45x - 17$

$-60x + 18 + 15x - 35$

Solve AND CHECK each equation.

3) $-(-3x - 4) = -7 + 4(x + 6)$

$\{-13\}$

$3x + 4 = -7 + 4x + 24$

$3x + 4 = 4x + 17$

$-3x \quad -3x$

$4 = x + 17$

$-17 \quad -17$

$x = -13$

C: $-(35) = -7 + -28$

$-35 = -35$ ✓

Write the equation in function form (Y=.....)

4) $3x - y = -6$

Isolate y

$-3x \quad -3x$

$-y = -3x - 6$

$y = 3x + 6$

Draw a graph for each inequality.

5) $-6 < a$ rewrite → $a > -6$

open dot → >, <

Write an inequality for each graph. Use the variable "X"

6)

$n \leq 6$

Closed Dot

≥, ≤, =

SOLVE each inequality. Circle the solution. Then GRAPH its solution.

7) $-6 - 3x < -(x - 4)$

$x > -5$:

$-3x - 6 < -x + 4$

$+x \quad +x$

$-2x - 6 < 4$

$+6 \quad +6$

$-2x < 10$

$\frac{-2x}{-2} < \frac{10}{-2}$

$x > -5$

Remember: when mult or divide the variable by a negative number, you MUST REVERSE THE SYMBOL.

SOLVE each compound inequality. Circle the solution. Then GRAPH its solution.

8) $-93 < -10x - 3 \le 67$

$-7 \le x < 9$:

$-93 < -10x - 3 \le 67$

$+3 \quad +3 \quad +3$

$-90 < -10x \le 70$

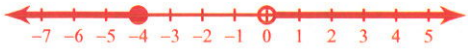
$\frac{-90}{-10} < \frac{-10x}{-10} \le \frac{70}{-10}$

$9 > x \ge -7$

↳ rewrite $-7 \le x < 9$

9) $-1 + 8p > -1$ or $3p - 10 \le -22$

$p > 0$ or $p \le -4$:



$-1 + 8P > -1$ OR $3P - 10 \le -22$

$+1 \quad +1 \qquad +10 \quad +10$

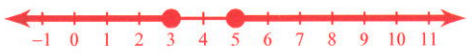
$\frac{8P}{8} > \frac{0}{8} \qquad \frac{3P}{3} \le \frac{-12}{3}$

$P > 0$ OR $P \le -4$

Solve each inequality and graph its solution.

10) $|-2n + 8| \ge 2$ ← THIS AN "OR"

$n \le 3$ or $n \ge 5$:



$-2N + 8 \le -2$ OR $-2N + 8 \ge 2$

$-8 \quad -8 \qquad -8 \quad -8$

$\frac{-2N}{-2} \le \frac{-10}{-2} \qquad \frac{-2N}{-2} \ge \frac{-6}{-2}$

$N \ge 5$ OR $N \le 3$

11) $|5 - x| < 6$ ← THIS IS AN "AND"

$-1 < x < 11$:

$-6 < 5 - x < 6$

$-5 \quad -5 \quad -5$

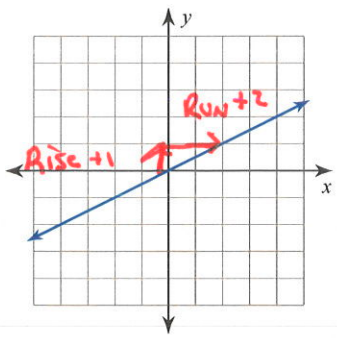
$\frac{-11}{-1} < \frac{-x}{-1} < \frac{1}{-1}$

$11 > x > -1$

rewrite $-1 < x < 11$

Find the slope of each line.

12) $\frac{1}{2}$



$m = \frac{\text{Rise}}{\text{RUN}} = \frac{1}{2}$ $m = \frac{1}{2}$

Find the slope of the line through each pair of points.

13) $(14, -16), (19, -10)$

$m = \frac{6}{5}$

$m = \frac{\Delta Y}{\Delta X}$

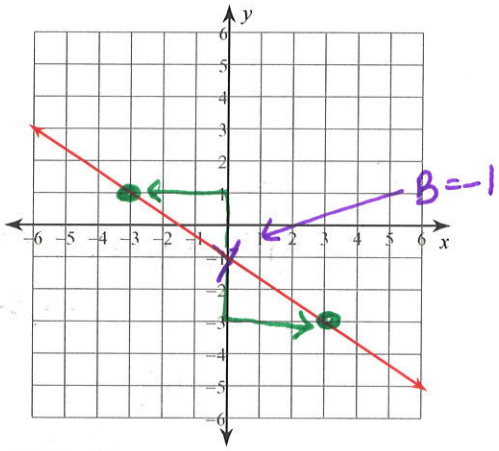
$M = \frac{-16 - (-10)}{14 - 19}$

$M = \frac{-6}{-5}$

simplify. Keep as an improper fraction.

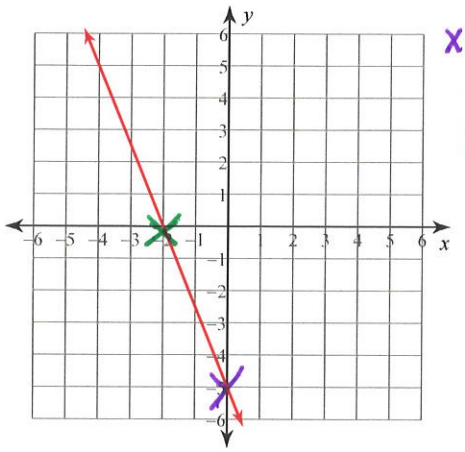
Sketch the graph of each line using slope and intercept. Clearly mark 3 points.

14) $y = -\frac{2}{3}x - 1$ $M = \frac{-2}{3}$ $B = -1$



Sketch the graph of each line using intercepts. Label the x-intercept (X) and y-intercept (Y)

15) $5x + 2y = -10$ $(x,0)$ $(0,y)$



X:
$5x = -10$
$x = -2$

Y:
$2y = -10$
$y = -5$

Write the point-slope form of the equation to describe the following lines. P/S $y - y_1 = m(x - x_1)$

16) through: $(5, -1)$, slope $= \frac{1}{3}$ (y_1, x_1, m)

$y + 1 = \frac{1}{3}(x - 5)$

Write the slope-intercept form of the equation to describe the following lines.

17) Slope $= -\frac{2}{5}$ (m), y-intercept $= -3$ (b)

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

18) through: $(-2, 5)$ and $(-1, -4)$

$y = -9x - 13$

STEP 1 FIND $m = \frac{\Delta y}{\Delta x} = \frac{5 - (-4)}{-2 - (-1)} = \frac{9}{-1}$

$m = -9$

STEP 2 pick a point and put in point-slope

$y - 5 = -9(x + 2)$

STEP 3: PUT IN slope-intercept

$y - 5 = -9x - 18$
$+5 \quad +5$

$y = -9x - 13$

Evaluate each function.

19) $f(x) = 2x^2 - x + 10$; Find (Substitute $x = -1$)

a) $f(-1)$ $= 2(-1)^2 - (-1) + 10 = 2 + 1 + 10 = 13$

b) $f(0)$ $= 2(0)^2 - 0 + 10 = 10$

c) $f(1)$ $= 2(1)^2 - 1 + 10 = 2 - 1 + 10 = 11$

13, 10, 11

Construct a scatter plot.
A) State if there appears to be a positive correlation, negative correlation, or no correlation.
B) Identify if the relationship is linear, or non-linear.

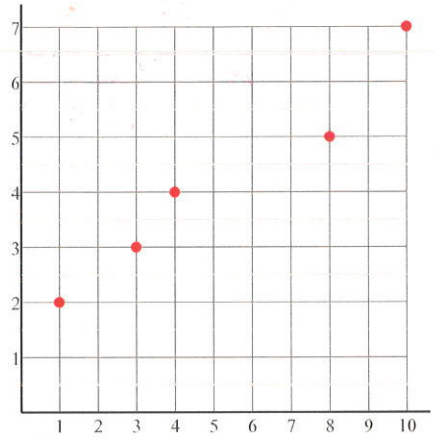
20)

X	Y
3	3
8	5

X	Y
10	7
8	5

X	Y
4	4

X	Y
1	2



* Positive correlation
* Linear relationship

Fit the Best Fit Line
a) Construct a scatter plot.
b) Find the equation of the line that best fits the data (round 2 decimals)
c) Plot the Best Fit Line on the scatterplot:

Label the y-intercept(Y);
Label 2 points with their letters.
Give the ordered pairs=
pt A:(2, ____) & pt B:(7, ___)

21)

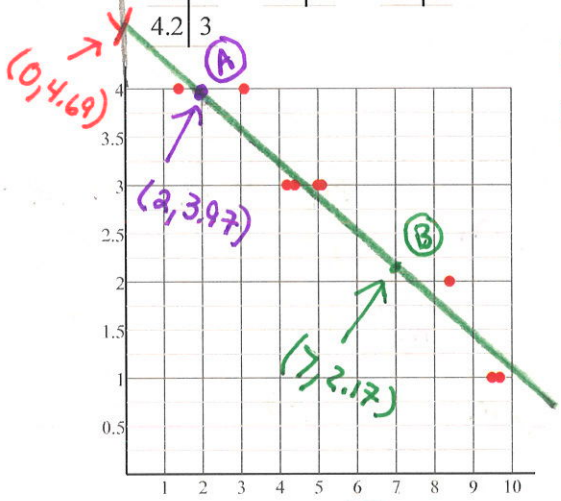
X	Y
1.4	4
1.4	4
3.1	4
4.2	3

X	Y
4.4	3
5	3
5.1	3

X	Y
8.4	2
9.5	1
9.7	1

(A) $y = -.36(2) + 4.69$
$(2, 3.97)$

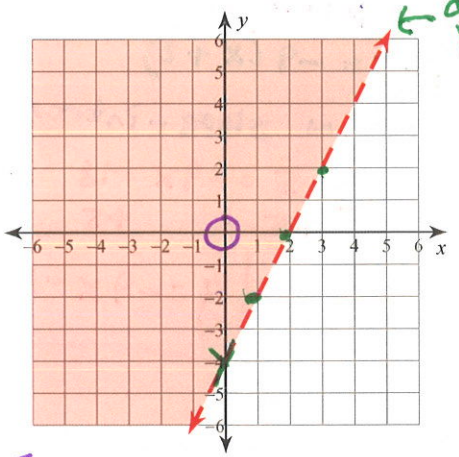
(B) $y = -.36(7) + 4.69$
$(7, 2.17)$



Negative correlation
$y = -0.36281x + 4.6939$ → $y = -0.36x + 4.69$

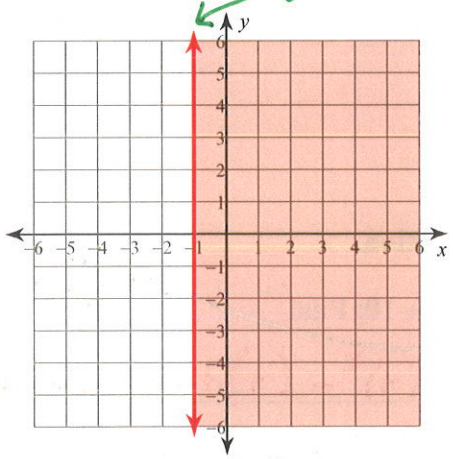
Sketch the graph of each linear inequality.

22) $y > 2x - 4$



T(0,0) $0 > -4$ T ☑
Shade side with origin (0,0)

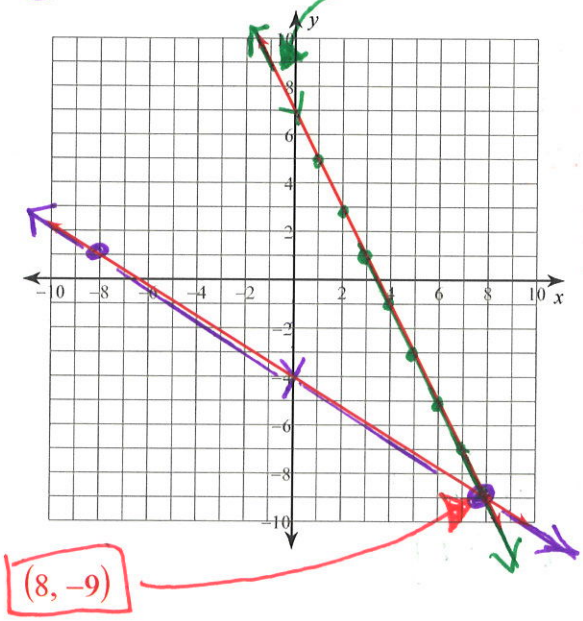
23) $x \geq -1$



Clearly graph the lines to solve the system.

24) (A) $2x + y = 7$ → $y = -2x + 7$

(B) $5x + 8y = -32$



(8, –9)

(B) $5x + 8y = -32$

$-5x \qquad -5x$

$\frac{8y}{8} = \frac{-5x}{8} - \frac{32}{8}$

$y = \frac{-5}{8}x - 4$

Solve the system by graphing using the TICALC.

a) Sketch the graph

b) Identify the solution on the graph and label. Round the ordered pair to 2 decimals.

c) Check algebraically.

25) $y = 0.55x - 8.35$

$y = -\frac{14}{9}x + \frac{80}{9}$

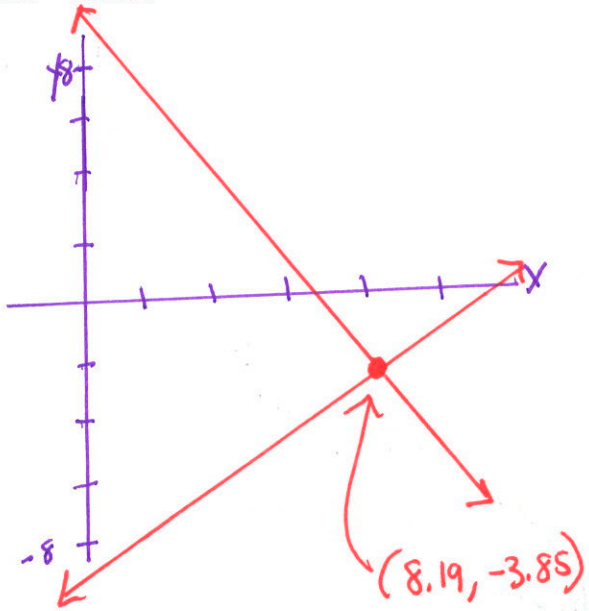
ROUND CORRECTLY

(b) (8.19, –3.85), (8.187, –3.846)

(c) c: $-3.85 = -3.8455$

c: $-3.85 = -3.8511$

(a)



Solve system by substitution. Then Check!

26) $y = 2x - 8$
$5x + 8y = -22$

(2, –4)

$5x+8(2x-8)=-22$

$5x+16x-64=-22$

$21x-64=-22$

$+64 \quad +64$

$\frac{21x}{21}=\frac{42}{21}$

$x=2$

FIND y:

$y=2x-8=2(2)-8$

$y=-4$

Solve each system by elimination (if possible). Clearly show your work!!!!

27) $-6x + y = -19$
$6x - y = 19$

0 = 0 T

Infinite number of solutions

Answer

28) $3x - 5y = 11$)x4 → $12x - 20y = 44$
$4x - 6y = 12$)x-3 → $-12x + 18y = -36$

0 T

$-2y = 8$

$\frac{-2y}{-2}=\frac{8}{-2}$

$y=-4$

(–3, –4)

FIND x:

$3x-5(-4)=11$

$3x+20=11$

$-20 \quad -20$

$3x=-9$

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

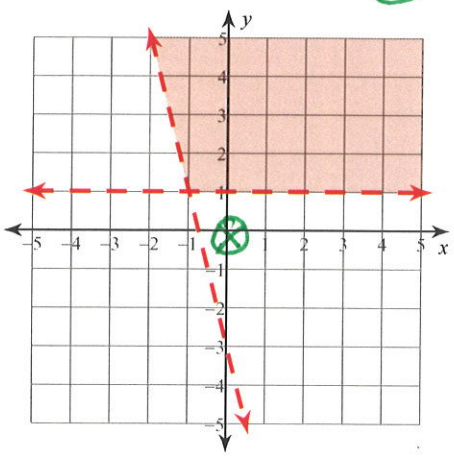
$x=-3$

Sketch the solution to each system of inequalities.

Test (0,0)

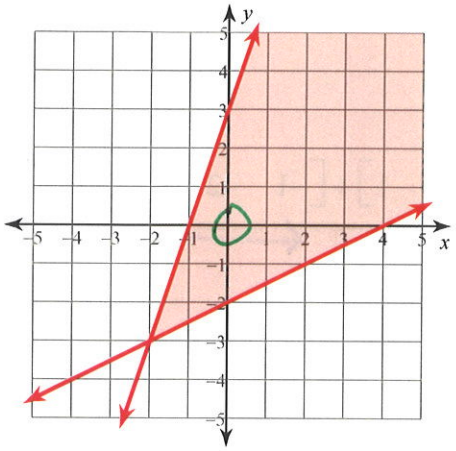
29) $y > 1$ $0 > 1$ (F)

$y > -4x - 3$ $0 > -3$ (F)



30) $y \leq 3x + 3$ → $0 \leq 3$ (T)

$y \geq \frac{1}{2}x - 2$ → $0 \geq -2$ (T)



Simplify. Write "undefined" for expressions that are undefined.

31) $\begin{bmatrix} -4 & 2 & -5 \\ -1 & -2 & 5 \end{bmatrix} + \begin{bmatrix} 5 & -6 & -2 \\ -5 & -3 & -6 \end{bmatrix}$

$\begin{bmatrix} 1 & -4 & -7 \\ -6 & -5 & -1 \end{bmatrix}$

32) $\begin{bmatrix} -4 & -1 \\ 1 & 0 \end{bmatrix} - \begin{bmatrix} -4 & 3 \\ -5 & 6 \end{bmatrix}$

$\begin{bmatrix} 0 & -4 \\ 6 & -6 \end{bmatrix}$

33) $\begin{bmatrix} 4 & 5 \\ -5 & -5 \end{bmatrix} \cdot \begin{bmatrix} -5 & 2 & 6 \\ 6 & -3 & 2 \end{bmatrix}$

$\begin{bmatrix} 10 & -7 & 34 \\ -5 & 5 & -40 \end{bmatrix}$

34) $\begin{bmatrix} 4 & 6 \\ 3 & 5 \\ -4 & -5 \end{bmatrix} - 4\begin{bmatrix} 5 & 6 \\ -1 & -1 \\ 4 & -1 \end{bmatrix}$

$\begin{bmatrix} -16 & -18 \\ 7 & 9 \\ -20 & -1 \end{bmatrix}$

35) $\begin{bmatrix} 2 & 1 \\ -1 & 0 \end{bmatrix} \cdot \begin{bmatrix} 1 & 0 \\ -3 & 5 \end{bmatrix} \cdot \begin{bmatrix} 5 & -1 \\ -5 & -2 \end{bmatrix}$

$\begin{bmatrix} -30 & -9 \\ -5 & 1 \end{bmatrix}$

36) $\begin{bmatrix} -1 \\ 3 \end{bmatrix} \cdot \begin{bmatrix} 1 & 5 & 5 \end{bmatrix} \cdot \begin{bmatrix} -2 & 6 \\ 0 & -5 \\ 1 & 1 \end{bmatrix}$

$\begin{bmatrix} -3 & 14 \\ 9 & -42 \end{bmatrix}$

37) $\begin{bmatrix} -2 & -6 & -3 & 1 \end{bmatrix} + \begin{bmatrix} -1 & -2 & -5 & -6 \end{bmatrix} - \begin{bmatrix} -4 & 6 & -3 & 3 \end{bmatrix}$

$\begin{bmatrix} 1 & -14 & -5 & -8 \end{bmatrix}$

Solve the system using any method. Clearly show your work. Matrix Algebra Equation or solve with elimination method.

38) $-4x + 6z = -2$
$4x - 2y - 6z = 12$
$-4x - 7y + 5z = 30$

$(5, -5, 3)$

Show this work

$$\begin{bmatrix} -4 & 0 & 6 \\ 4 & -2 & -6 \\ -4 & -7 & 5 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} -2 \\ 12 \\ 30 \end{bmatrix}$$

$$X = [A]^{-1}[B]$$

Give answer:

① ordered pair $(5, -5, 3)$ OR

② Variables

$x = 5$

$y = -5$

$z = 3$