Name_____**KEY**_____ ID: 1

Chapter 3 Practice Test (3.1 - 3.3)

Date_____ Period_____

Solve by graphing BY HAND. Check!

1) $y = -\dfrac{1}{4}x - 1$

$y = \dfrac{1}{2}x - 4$
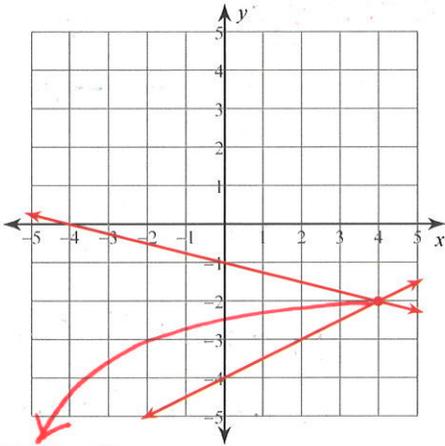
$(4, -2)$

$C: -2 = -\dfrac{1}{4}(4) - 1$

$-2 = -2 \checkmark$

$C: -2 = \dfrac{1}{2}(4) - 4$

$-2 = -2 \checkmark$

2) $x + y = -4 \rightarrow y = -x - 4$

$x - 2y = 2 \rightarrow y = \dfrac{1}{2}x - 1$

$(-2, -2)$

Remember to check the solution (x, y) in **both** original equations!!
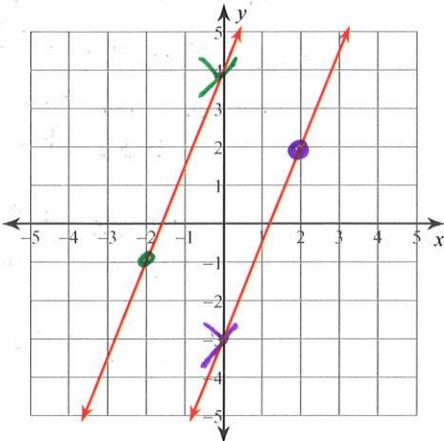
USE YOUR CALC!!

3) $5x - 2y = -8$

$5x - 2y = 6$

No solution

③ $5x - 2y = -8$

$-5x \qquad\qquad -5x$

$\dfrac{-2y}{-2} = \dfrac{-5x - 8}{-2} \dfrac{}{-2}$

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

③ $5x - 2y = 6$

$-5x \qquad\qquad -5x$

$\dfrac{-2y}{-2} = \dfrac{-5x + 6}{-2} \dfrac{}{-2}$

$y = \dfrac{5}{2}x - 3$
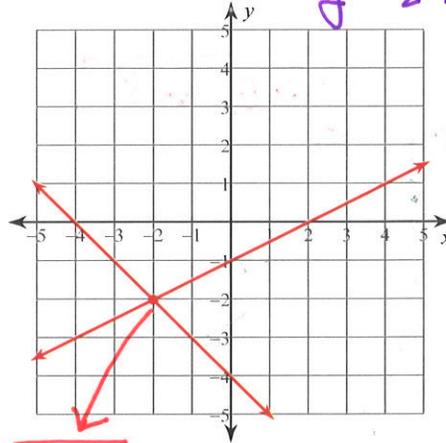
**Solve the system by graphing using the TICALC.**
a) Sketch the graph
b) Identify the solution on the graph and label. Roundthe ordered pair to 2 decimals.
c) Check algebraically.

4) $y = -\dfrac{1}{4}x + \dfrac{11}{2}$

$y = -\dfrac{11}{3}x - \dfrac{15}{4}$

$(-2.707, 6.176)$ $\boxed{(-2.71, 6.18)}$
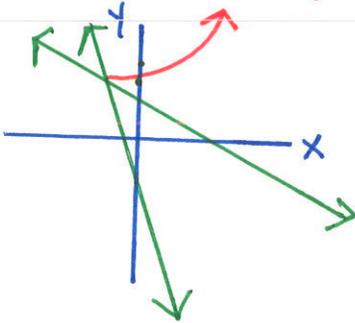
$C: 6.18 \cong 6.1775 ✓$

$C: 6.18 \cong 6.1867 ✓$

5) $y = 1.567x - 8.375$
$y = -1.425x + 1.74$

$(3.38, -3.077)$

$\boxed{(3.38, -3.08)}$
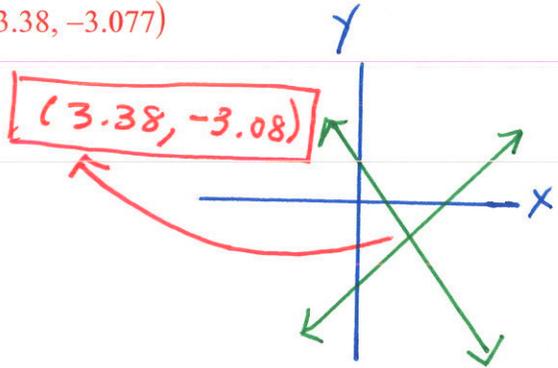
$C: -3.08 \cong -3.07854 ✓$

$C: -3.08 \cong -3.0765 ✓$

Solve system by substitution. Then Check!

6) $-8x + 8y = 16$
$y = -6x + 9$

$(1, 3)$

$-8x + 8(-6x + 9) = 16$

$-8x - 48x + 72 = 16$

$-56x + 72 = 16$

$ - 72 \quad -72$

$\dfrac{-56x}{-56} = \dfrac{-56}{-56}$

$\boxed{x = 1}$

FIND Y

$y = -6x + 9 = -6(1) + 9$

$\boxed{y = 3}$

$C: 16 = 16 ✓$ $C: 3 = 3 ✓$

7) $y = -5x - 9$
$-4x + 8y = 16$

$(-2, 1)$

$-4x + 8(-5x - 9) = 16$

$-4x - 40x - 72 = 16$

$-44x - 72 = 16$

$ +72 \quad +72$

$\dfrac{-44x}{-44} = \dfrac{88}{-44}$

$\boxed{x = -2}$

FIND Y

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

$\boxed{y = 1}$

$C: 1 = 1 ✓$ $C: 16 = 16 ✓$

-2-

Solve each system by elimination (if possible). Then Check!

8) $3x + 9y = 6$
   $-2x - 9y = 2$

$(8, -2)$ $X = 8$

ADD method
opposite
COEF's

FIND Y

$3(8) + 9y = 6$
$-24 \qquad -24$
$\dfrac{9y}{9} = \dfrac{-18}{9}$
$y = -2$

9) $-2x - 5y = -8$
   $2x + 4y = 4$

$(-6, 4)$ $\dfrac{-y}{-1} = \dfrac{-4}{-1}$

$y = 4$

FIND x

$2x + 4(4) = 4$
$\quad -16 \quad -16$
$\dfrac{2x}{2} = \dfrac{-12}{2}$
$X = -6$

10) $-4x - 2y = -16 \longrightarrow -4x - 2y = -16$
$-1(-4x - 5y = -22) \longrightarrow 4x + 5y = 22$

$(3, 2)$

$\dfrac{3y}{3} = \dfrac{6}{3}$
$y = 2$

FIND X

$-4x - 2(2) = -16$
$-4x - 4 = -16$
$\quad +4 \quad +4$
$\dfrac{-4x}{-4} = \dfrac{-12}{-4}$ $X = 3$

11) $3x + 8y = -3 \longrightarrow 3x + 8y = -3$
$-1(6x + 8y = -30) \longrightarrow -6x - 8y = 30$

$(-9, 3)$

$\dfrac{-3x}{-3} = \dfrac{27}{-3}$
$X = -9$

FIND Y

$3(-9) + 8y = -3$
$-27 + 8y = -3$
$+27 \qquad +27$
$\dfrac{8y}{8} = \dfrac{24}{8}$
$Y = 3$

SPECIAL CASES

12) $2x + 8y = -24$
    $-2x - 8y = 24$
    $0 = 0$ T
    Infinite number of solutions

13) $8x + 8y = 2$
    $-8x - 8y = 8$
    $0 \neq 10$ F
    No solution

Variables drop out
and
numbers are EQUAL

Variables drop out
and
numbers are NOT EQUAL

Solve each system by elimination. Then Check!

14) $(-10x - 20y = -20) \times 4 \rightarrow -40x - 80y = -80$
    $(4x + 10y = 14) \times 10 \rightarrow 40x + 100y = 140$

$(-4, 3)$

$$\frac{20y}{20} = \frac{60}{20}$$

$Y = 3$

FIND X

$4x + 10(3) = 14$
$4x + 30 = 14$
$\quad -30 \quad -30$
$$\frac{4x}{4} = \frac{-16}{4}$$

$X = -4$

15) $(7x - 5y = -21) \times 3 \rightarrow 21x - 15y = -63$
    $(-3x - 3y = -27) \times 7 \rightarrow -21x - 21y = -189$

$(2, 7)$

$$\frac{-36y}{-36} = \frac{252}{-36}$$

$Y = 7$

FIND Y

$7x - 5(7) = -21$
$7x - 35 = -21$
$\quad +35 \quad +35$
$$\frac{7x}{7} = \frac{14}{7}$$

$X = 2$

16) $(6x - 8y = -14) \times 4 \rightarrow 24x - 32y = -56$
    $(4x + 5y = -30) \times -6 \rightarrow -24x - 30y = +180$

$(-5, -2)$

$$\frac{-62y}{-62} = \frac{124}{-62}$$

$y = -2$

FIND X:

$4x + 5(-2) = -30$
$4x - 10 = -30$
$\quad +10 \quad +10$
$$\frac{4x}{4} = \frac{-20}{4}$$

$X = -5$

Remember to check

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Sketch the solution to each system of inequalities.

TEST $(0,0)$

17) $y \geq -2x + 3$ T: $0 \geq 3$ Ⓕ

      $y \leq \dfrac{1}{2}x - 2$ T: $0 \leq -2$ Ⓕ

Solution Region
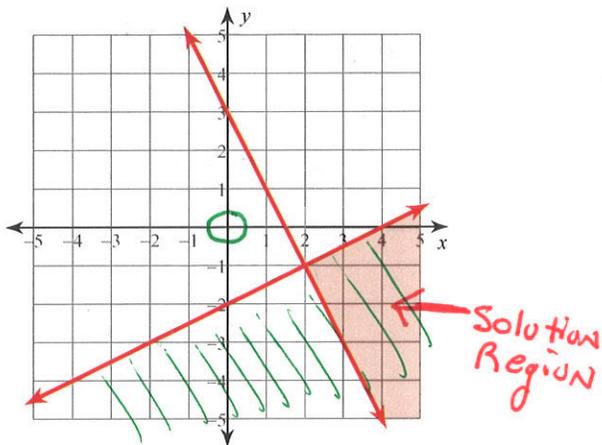
SOLID LINES ↑
$=, \leq, \geq$

18) $y < \dfrac{3}{2}x + 2$ T: $0 < 2$ Ⓣ

      $y < -\dfrac{1}{2}x - 2$ T: $0 < -2$ Ⓕ
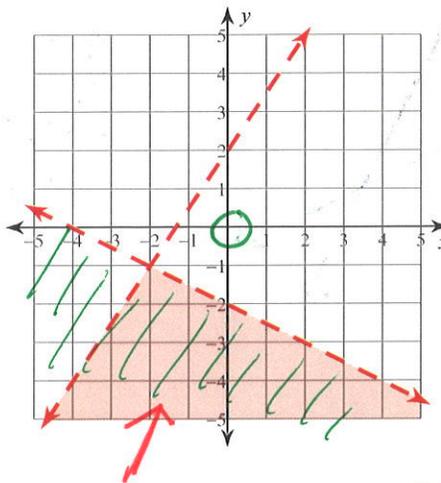
DASHED LINES ↑
$<, >$

19) $2x + y > -3$
     $3x - y > -2$
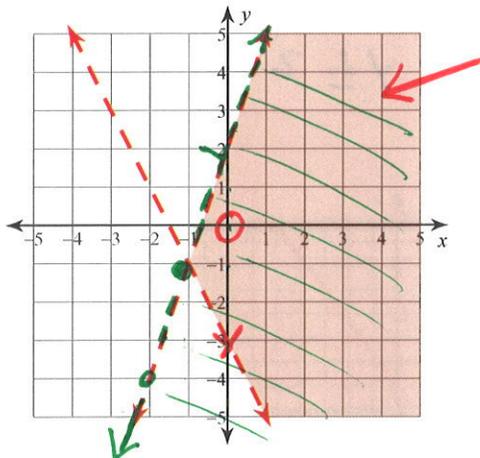
$2x + y > -3$
$-2x \qquad -2x$
_____
$y > -2x - 3$

$T(0,0)$
$0 > -3$ Ⓣ

$3x - y > -2$
$-3x \qquad -3x$
_____
$-y > -3x - 2$
$\dfrac{-y}{-1} \quad \dfrac{-3x}{-1} \quad \dfrac{-2}{-1}$

↓ reverse symbol

$\boxed{y < 3x + 2}$

$T(0,0)$
$0 > -2$ Ⓣ

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20) $2x + y \leq 1$
$\quad x + 2y \geq -4$

$2x + y \leq 1$
$-2x \qquad -2x$
_____
$y \leq -2x + 1$

$T(0,0)$
$0 \leq 1\ T$

$x + 2y \geq -4$
$-x \qquad\qquad -x$
_____
$\dfrac{2y}{2} \geq \dfrac{-x}{2} - \dfrac{4}{2}$

$y \geq -\dfrac{1}{2}x - 2$

$T(0,0)$
$0 \geq -4\ T$
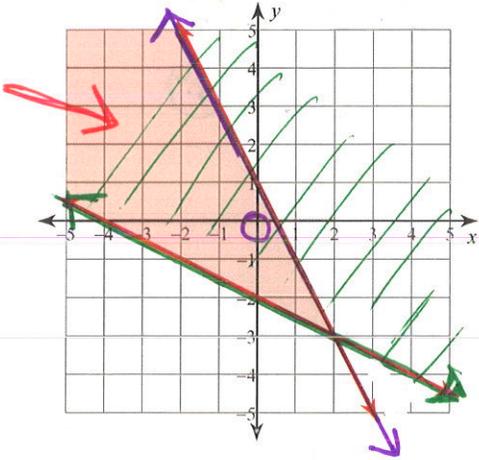
Sketch the solution. Add the inequality to the following to each system of inequalities:
$$Y \leq 2\ (Y\ LE\ 2)$$

21) $y > -x - 7$
$\quad y < -11x + 3$

$Y \leq 2$

22) $y \leq -\dfrac{4}{3}x - 5$

$\quad y \geq \dfrac{4}{3}x + 3$

$Y \leq 2$

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