

7.2 Warm Up (and Review)

Solve each system by substitution. Check algebraically.

1)  $-3x + 4y = -8$   
 $y = -3x + 13$

$$-3x + 4(-3x + 13) = -8$$

$$-3x - 12x + 52 = -8$$

$$-15x + 52 = -8$$

$$\begin{array}{r} -15x + 52 = -8 \\ -52 \quad -52 \\ \hline -15x = -60 \\ \frac{-15}{-15} \quad \frac{-60}{-15} \\ \hline x = 4 \end{array}$$

$$y = -3(4) + 13$$

$$y = 1$$

C:  $-3(4) + 4(1) = -8$     C:  $1 = -3(4) + 13$   
 $-8 = -8 \checkmark$                        $1 = 1 \checkmark$

2)  $y = -2x + 13$   
 $2x - 9y = 23$

$$2x - 9(-2x + 13) = 23$$

$$2x + 18x - 117 = 23$$

$$20x - 117 = 23$$

$$\begin{array}{r} 20x - 117 = 23 \\ +117 \quad +117 \\ \hline 20x = 140 \\ \frac{20}{20} \quad \frac{140}{20} \\ \hline x = 7 \end{array}$$

$$y = -2(7) + 13$$

$$y = -1$$

C:  $-1 = -2(7) + 13$     C:  $2(7) - 9(-1) = 23$   
 $-1 = -1 \checkmark$                        $23 = 23 \checkmark$

3) Amy's school is selling tickets to the annual talent show. On the first day of ticket sales the school sold 1 adult ticket and 6 student tickets for a total of \$23. The school took in \$17 on the second day by selling 1 adult ticket and 4 student tickets. Find the price of an adult ticket and the price of a student ticket.

Key Info (draw picture):

DAY 1 - 1 Adult Tix, 6 Student Tix → EARNED \$23  
 DAY 2 - 1 Adult Tix, 4 Student Tix → EARNED \$17

Define Variable(s) - remember units:  $x = \$$  per adult Ticket  
 $y = \$$  per student Ticket

Define Equation(s):

DAY 1 Eq1:  $1x + 6y = 23$  ← ISOLATE X:  $x = 23 - 6y$   
 DAY 2 Eq2:  $1x + 4y = 17$

Solve: FIND Y  $(23 - 6y) + 4y = 17$                       FIND X:  $x = 23 - 6(3)$

$$\begin{array}{r} (23 - 6y) + 4y = 17 \\ x \quad -2y + 23 = 17 \\ \quad -2y \quad -23 \\ \hline -2y = -6 \\ \frac{-2}{-2} \quad \frac{-6}{-2} \\ \hline y = 3 \end{array}$$

$x = 5$

Answer (in words) Price for adult ticket is \$5 and student ticket is \$3.

Solve the system by graphing; Then check the solution algebraically.

= SIGNS LOOKING FOR POI

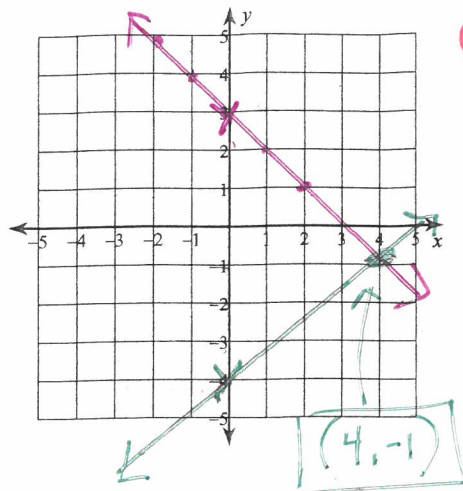
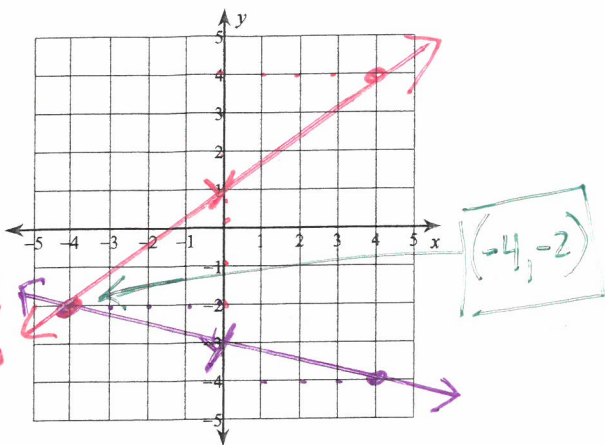
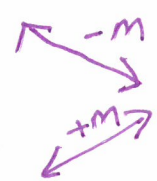
4)  $y = -\frac{1}{4}x - 3$   $m = -\frac{1}{4}$   $b = -3$   
 $y = \frac{3}{4}x + 1$   $m = \frac{3}{4}$   $b = 1$

5)  $y = -x + 3$   $m = -1$   $b = 3$   
 $y = \frac{3}{4}x - 4$   $m = \frac{3}{4}$   $b = -4$

SPECIAL CASES

① // lines  
Same  $m$   
NO SOLUTION

② Same line  
 $\infty$  SOLUTIONS



C:  $-2 = -\frac{1}{4}(-4) - 3$   
 $-2 = 1 - 3$   
 $-2 = -2 \checkmark$

C:  $-2 = \frac{3}{4}(-4) + 1$   
 $-2 = -3 + 1$   
 $-2 = -2 \checkmark$

C:  $-1 = -(4) + 3$   
 $-1 = -4 + 3$   
 $-1 = -1 \checkmark$

C:  $-1 = \frac{3}{4}(4) - 4$   
 $-1 = 3 - 4$   
 $-1 = -1 \checkmark$

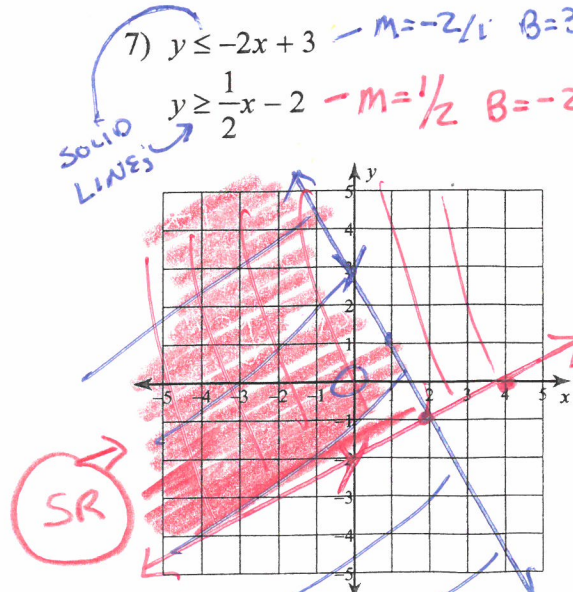
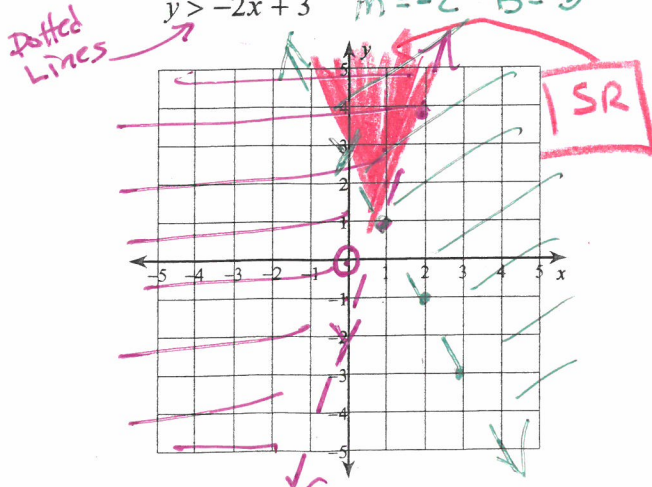
Sketch the solution to each system of inequalities. Mark the solution region with an arrow.

6)  $y > 3x - 2$   $m = 3$   $b = -2$   
 $y > -2x + 3$   $m = -2$   $b = 3$

7)  $y \leq -2x + 3$   $m = -2$   $b = 3$   
 $y \geq \frac{1}{2}x - 2$   $m = \frac{1}{2}$   $b = -2$

INEQ'S  
FIND SR

$\leq, \geq$  SOLID LINE  
VS  
 $<, >$  DOTTED LINE



MUST SHOW ON TEST

INEQ #1: T(0,0)  $\rightarrow 0 > 3(0) - 2$

$0 > -2$  (T) shade the side with (0,0)

INEQ #2: (0,0)  $\rightarrow 0 > 3$  (F) shade the side that does NOT have (0,0)

TEST (0,0)

INEQ #1  $0 \leq 3$  (T)

INEQ #2  $0 > -2$  (T)