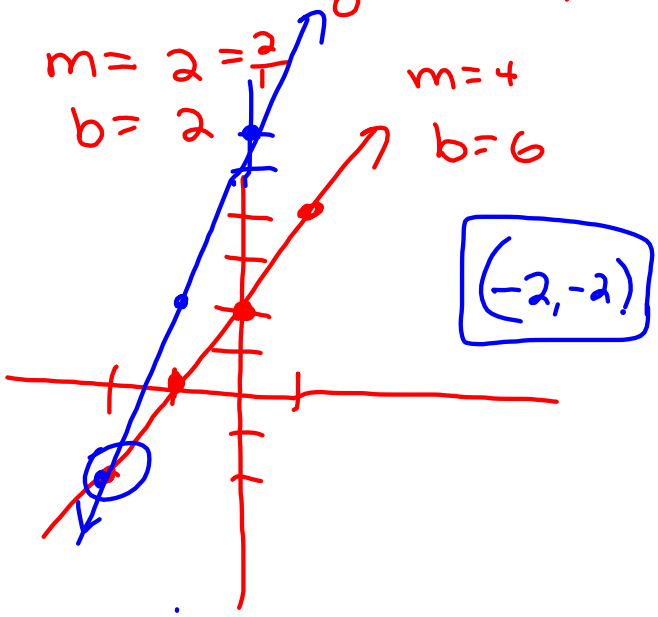
14. $y = 2x + 2$ $y = 4x + 6$

$m = 2 = \frac{2}{1}$ $m = 4$

$b = 2$ $b = 6$



$(-2, -2)$

22.

$2x + y = 9$

$-2x \quad -2x$

$y = -2x + 9$

$m = -2$

$b = 9$

$2x + 3y = 15$

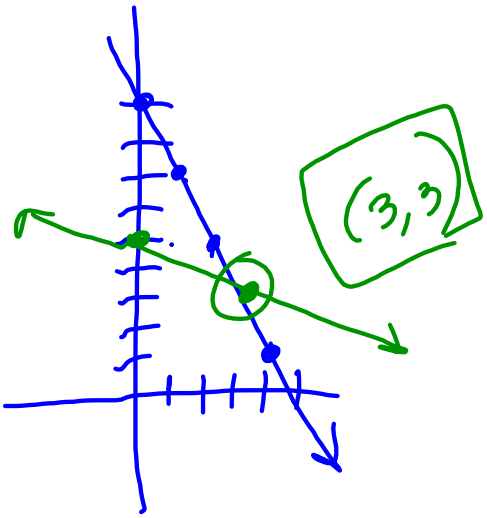
$-2x \quad -2x$

$\frac{3y}{3} = \frac{-2x}{3} + \frac{15}{3}$

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

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

$b = 5$



$(3, 3)$

Warm-up: Yikes!!

Suppose a = 2b + 3, b = 4c + 5, c = 6d + 7, and d = 8. What is the value of a?

$c = 6(8) + 7$

$48 + 7$

$c = 55$

$b = 4(55) + 5$

$220 + 5$

$b = 225$

$a = 2(225) + 3$

$450 + 3$

$a = 453$

6.2 Solve Linear Systems by Substitution

Before	You solved systems of linear equations by graphing.
Now	You will solve systems of linear equations by substitution.
Why?	So you can find tubing costs, as in Ex. 32.

GOAL: Solve systems of linear equations exactly and approximately.

Example 1!

Solve by using substitution:

$x = 3y + 5$

$2x - 4y = 12$

$2(3y+5) - 4y = 12$

$6y + 10 - 4y = 12$

$2y + 10 = 12$

$-10 \quad -10$

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

$y = 1$

$x = 3y + 5$

$x = 3(1) + 5$

$x = 8$

(x, y)

$(8, 1)$

Example 2!

Solve by using substitution:

$y = x - 1$

$4x - y = 19$

$4x - (x - 1) = 19$

$4x - x + 1 = 19$

$3x + 1 = 19$

$-1 \quad -1$

$\frac{3x}{3} = \frac{18}{3}$

$x = 6$

$y = x - 1$

$y = 6 - 1$

$y = 5$

$(6, 5)$

Example 3-tougher!

Solve by using substitution:

$20x - 30y = -50$

$x + 2y = 1$ → $x = 1 - 2y$

$20(1-2y) - 30y = -50$

$20 - 40y - 30y = -50$

$-20 \quad -70y = -50$

$-20 \quad -20$

$\frac{-70y}{-70} = \frac{-70}{-70}$

$y = 1$

$x = 1 - 2(1)$

$x = 1 - 2$

$x = -1$

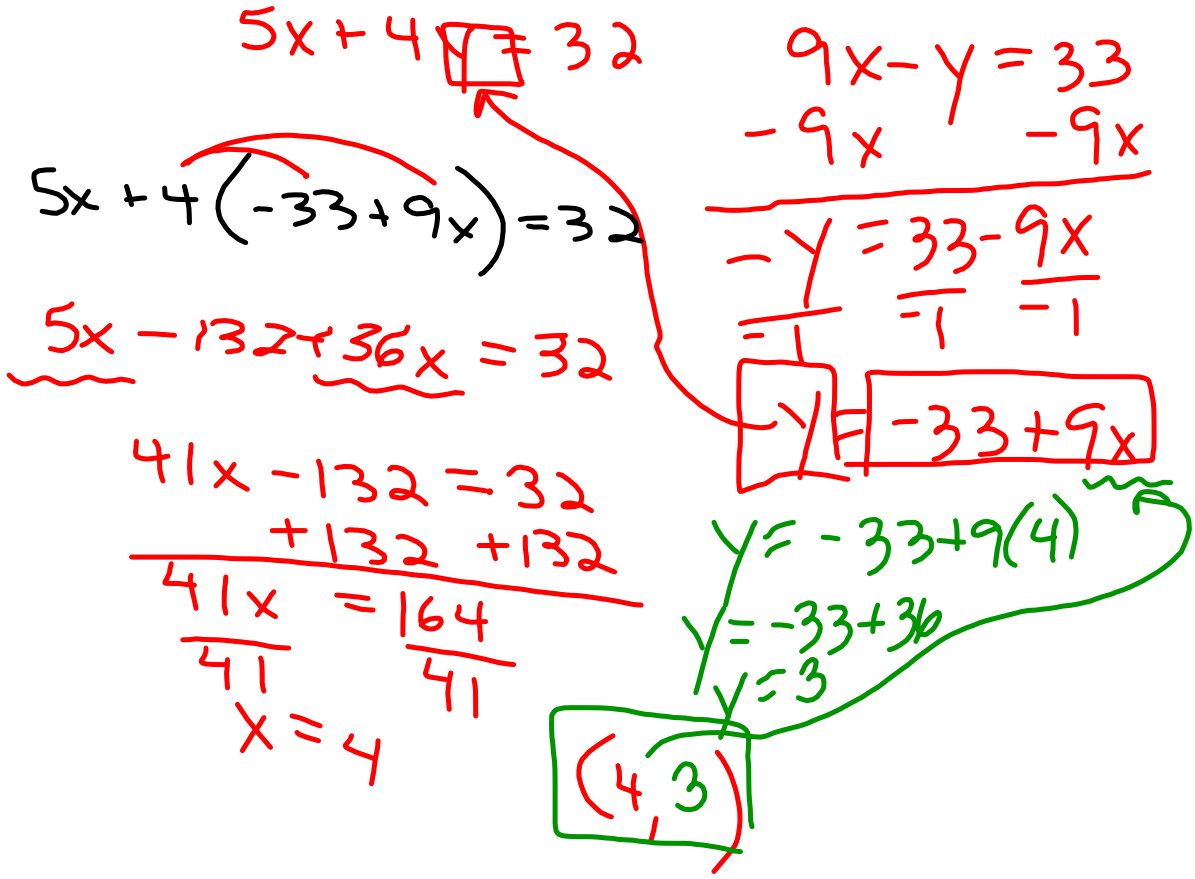
$(-1, 1)$

Example 4-same idea!

Solve by using substitution:

$$5x + 4y = 32$$

$$9x - y = 33$$



Last One: Word Problem!

C A

The owners of a carnival have found that twice as many children as adults come to the carnival. Solve a system to estimate the number of children and the number of adults at the carnival when 3,570 people attend.

$C = 2A$

$C + A = 3570$

$2A + A = 3570$

$\frac{3A}{3} = \frac{3570}{3}$

$A = 1190$

$C = 2(1190)$

$C = 2380$

Homework 6.2:
p.381: 4,5,6,10,16,28