

(b) Now solve the system by graphing

Equation 1:  $2x - 3y = 5$

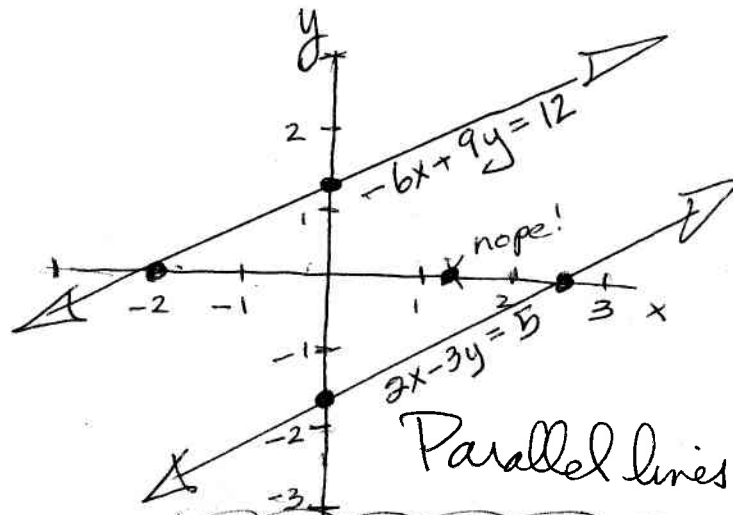
Equation 2:  $-6x + 9y = 12$

$2x - 3y = 5$

$-6x + 9y = 12$

$$\begin{array}{c|c} x & y \\ \hline 0 & -\frac{5}{3} = -1\frac{2}{3} \\ \frac{5}{2} & 0 \end{array}$$

$$\begin{array}{c|c} x & y \\ \hline 0 & \frac{12}{9} = \frac{4}{3} = 1\frac{1}{3} \\ -2 & 0 \end{array}$$



(c) Solve the system again by elimination. Clearly state your answer.

$$\begin{array}{r} 3(2x - 3y = 5) \xrightarrow{(3)} 6x - 9y = 15 \\ -6x + 9y = 12 \end{array} \begin{array}{l} \downarrow A \\ \downarrow D \\ \downarrow D \end{array}$$

$$\hline 0 \quad 0 = 27$$

$$0 = 27$$

NO SOLUTION!  
Inconsistent  
 $\{\} = \emptyset$

Variables dropped out and left false statement

3. (a) Solve the given system by either addition or substitution (which would be easier to use?)

$$\begin{cases} 5x + 2y = -10 \\ -10x - 4y = 20 \end{cases} \rightarrow \frac{2y}{2} = -\frac{5x}{2} - \frac{10}{2}$$

Substitution  $y = -\frac{5}{2}x - 5$

$$-10x - 4\left(-\frac{5}{2}x - 5\right) = 20$$

$$-10x + 10x + 20 = 20$$

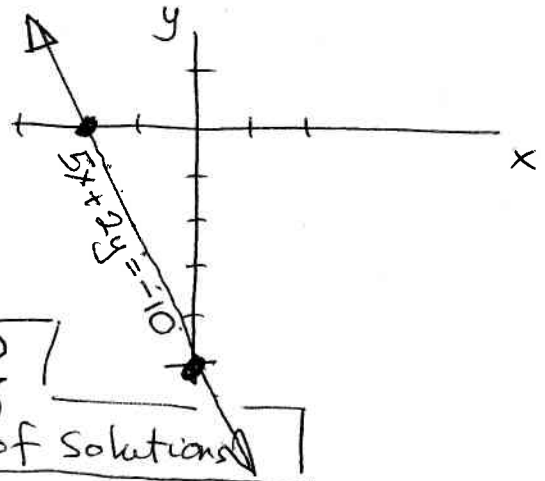
$$20 = 20 \text{ Huh?}$$

Variables dropped out and left a TRUE statement, so this means the system is **DEPENDENT**  
**INFINITE SOLUTIONS**

(b) Solve the same system by graphing. State the solution in words AND express it in set notation.

$$\begin{cases} 5x + 2y = -10 \\ -10x - 4y = 20 \end{cases}$$

$$\begin{array}{c|c} x & y \\ \hline 0 & -5 \\ -2 & 0 \end{array} \quad \begin{array}{c|c} x & y \\ \hline 0 & -5 \\ -2 & 0 \end{array}$$



SOLUTION:  $\{(x, y) \mid 5x + 2y = -10\}$   
Independent  $\Rightarrow$  infinite number of solutions