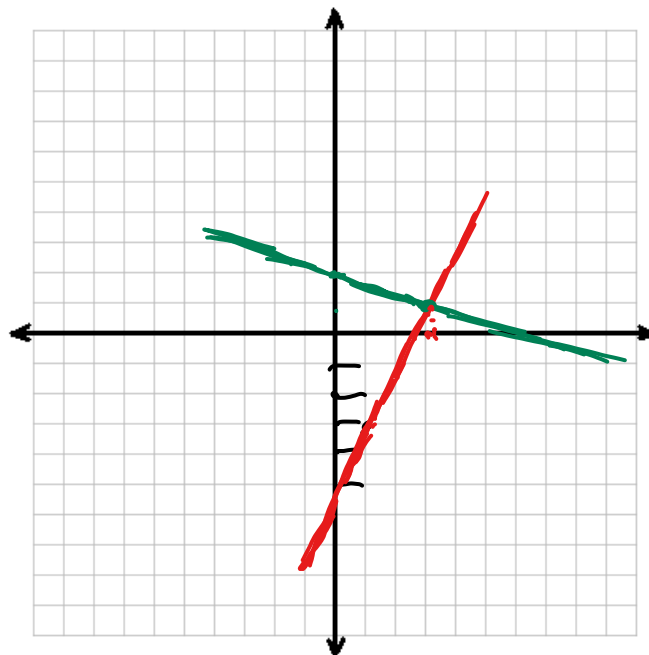


1. Solve the following system graphically:

$$\begin{cases} y = 2x - 5 \\ y = -\frac{1}{3}x + 2 \end{cases}$$

*Solution:*  
*(3, 1)*



Solve graphically and by elimination.

2)

$$12x - 8y = 48$$

$$y - 4 = -2(x - 2)$$

*divide by 4  $\Rightarrow 3x - 2y = 12$*

$$\begin{aligned} -2y &= -3x + 12 \\ y &= \frac{3}{2}x - 6 \end{aligned}$$

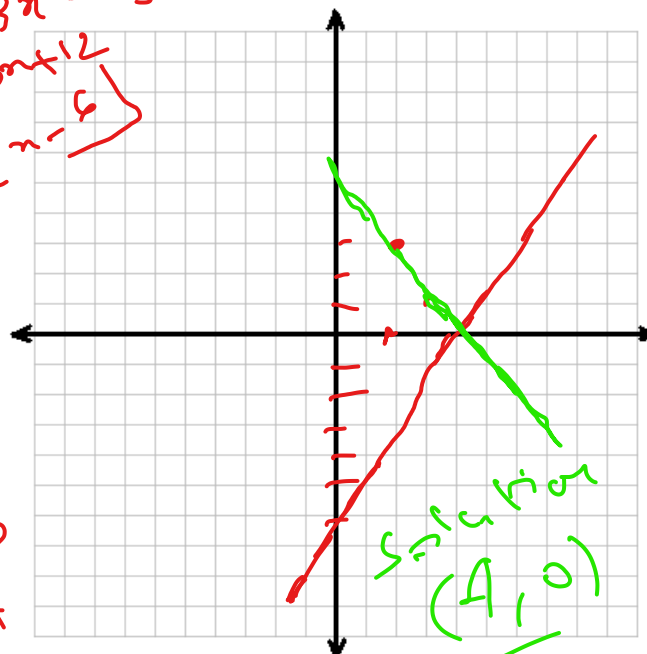
$$\begin{cases} 12x - 8y = 48 \\ y - 4 = -2x + 4 \end{cases}$$

$$\Rightarrow \begin{cases} 12x - 8y = 48 \\ y + 2x = 8 \end{cases}$$

$$\Rightarrow \begin{cases} 12x - 8y = 48 \\ -6y - 12x = -48 \end{cases}$$

$$\begin{aligned} -14y &= 0 \Rightarrow y = 0 \\ x &= 4 \end{aligned}$$

*(4, 0)*



*Solution*  
*(4, 0)*

$$\begin{aligned} 2x + 3 \cdot (1) &= 3 \\ 2x &= 3 - 3 \\ 2x &= 0 \\ x &= 0 \end{aligned}$$

3) Solve:

$$\begin{aligned} 12x - 6y &= -6 \\ 16x - 8y &= 40 \end{aligned}$$

$\div 6$

$$\begin{cases} 2x - y = -1 \\ 2x + y = 5 \end{cases}$$

$\div 8$

$$0 = -6$$

No solutions

$$\begin{aligned} 2x + 3y &= 3 \\ 3x + 5y &= 5 \end{aligned}$$

$\times 3$

$$\begin{aligned} 6x + 9y &= 9 \\ -6x - 10y &= -10 \\ \hline y &= 1 \end{aligned}$$

$(0, 1)$

4) Tickets for the Valentine Dance cost \$3 per person or \$5 per couple. If \$475 worth of tickets were sold and 180 people attended the dance, how many couples were there?

$$\begin{aligned} 3p + 5c &= 475 \\ p + 2c &= 180 \\ \Rightarrow p &= 180 - 2c \\ 3(180 - 2c) + 5c &= 475 \\ 540 - 6c + 5c &= 475 \\ 540 - c &= 475 \Rightarrow c = 475 + 540 \\ c &= 65 \\ p &= 180 - 2(65) \\ p &= 180 - 130 = \underline{\underline{50}} \end{aligned}$$

5) The sum of two numbers is 200 and their difference is 28. What are the two numbers?

$$\begin{aligned} x + y &= 200 \\ x - y &= 28 \\ 2x &= 228 \\ x &= \frac{228}{2} = 114 \\ y &= \underline{\underline{86}} \end{aligned}$$

$$\begin{aligned} 114 + y &= 200 \\ y &= 200 - 114 \\ y &= \underline{\underline{86}} \end{aligned}$$