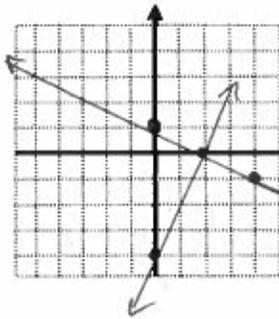


# Linear Systems Review

Ex/ Solve the following system by graphing:

$$y = -\frac{1}{2}x + 1 \quad y\text{-int} = 1, \text{ slope} = -\frac{1}{2} \begin{matrix} \text{down} \\ \text{right} \end{matrix}$$



$\therefore$  POI  
(2,0)

$$2x - y = 4$$

$$\begin{array}{r|l} x & y \\ 0 & -4 \\ 2 & 0 \end{array}$$

Ex/ Determine if (3,-4) is the solution to:  $2x - y = 10$   
 $x + 3y = 9$

$$\begin{aligned} 2x - y &= 10 \\ 2(3) - (-4) &= 10 \\ 6 + 4 &= 10 \\ 10 &= 10 \checkmark \end{aligned}$$

$$\begin{aligned} x + 3y &= 9 \\ 3 + 3(-4) &= 9 \\ 3 - 12 &= 9 \\ -9 &= 9 \quad X \end{aligned}$$

$\therefore$  Not the solution

Ex/ Solve by the most appropriate method.

a)  $y = 3x - 4$   
 $y = 2x + 7$

$$\begin{aligned} 3x - 4 &= 2x + 7 \\ 3x - 2x &= 7 + 4 \\ x &= 11 \end{aligned}$$

$$\begin{aligned} y &= 2x + 7 \\ &= 2(11) + 7 \\ &= 29 \end{aligned}$$

$\therefore$  POI (11, 29)

b)  $x = 2y - 5$   
 $3x - y = -10$

$$\begin{aligned} 3(2y - 5) - y &= -10 \\ 6y - 15 - y &= -10 \\ 5y &= -10 + 15 \\ 5y &= 5 \\ y &= 1 \end{aligned}$$

$$\begin{aligned} x &= 2y - 5 \\ &= 2(1) - 5 \\ &= -3 \end{aligned}$$

$\therefore$  POI (-3, 1)

c)  $2x + 3y = 4$   
Add  $x - 3y = 2$

$$\begin{aligned} 3x &= 6 \\ x &= 2 \end{aligned}$$

$$\begin{aligned} 2x + 3y &= 4 \\ 2(2) + 3y &= 4 \\ 4 + 3y &= 4 \\ 3y &= 4 - 4 \\ 3y &= 0 \\ y &= 0 \end{aligned}$$

$\therefore$  POI (2, 0)

Ex/ Lorraine buys 6 cheap golf balls and 4 expensive ones for \$12.50. Bob buys 4 cheap and 3 expensive balls for \$9.00. What are the prices of the two kinds of golf balls?

$x = \#$  of cheap balls  
 $y = \#$  of expensive

$$\begin{aligned} 6x + 4y &= 12.5 \\ 4x + 3y &= 9 \end{aligned}$$

$$\begin{aligned} &\xrightarrow{y \times 2} 12x + 8y = 25 \\ &\xrightarrow{x \times 3} 12x + 9y = 27 \\ &\quad \underline{-1y = -2} \\ &\quad y = 2 \end{aligned}$$

$$\begin{aligned} 6x + 4(2) &= 12.5 \\ 6x + 8 &= 12.5 \\ 6x &= 12.5 - 8 \\ 6x &= 4.5 \\ x &= 0.75 \end{aligned}$$

$\therefore$  Cheap balls cost \$0.75, expensive \$2 each

Ex/ In a biathlon, Robbie ran at 12 km/h and swam at 3 km/h. He completed the race in 1 h 45 min, and travelled 16.5 km. How far did he run?

	D	S	T
Run	12x	12	x
Swim	3y	3	y
	16.5	1.75	1.75

$$\begin{aligned}
 x + y &= 1.75 \\
 12x + 3y &= 16.5 \\
 \hline
 3x + 3y &= 5.25 \\
 \hline
 9x &= 11.25 \\
 x &= 1.25
 \end{aligned}$$

$$\begin{aligned}
 x + y &= 1.75 \\
 1.25 + y &= 1.75 \\
 y &= 1.75 - 1.25 \\
 &= 0.5
 \end{aligned}$$

$$\begin{aligned}
 \text{Run} &= 12x \\
 &= 12(1.25) \\
 &= 15
 \end{aligned}$$

∴ He ran 15 km

Ex/ A tennis club charges an annual fee and an hourly fee for court time. One year, Tony played for 39 hours and paid \$384. Sandra played for 51 hours and paid \$456. Find the annual fee and the hourly fee.

x = annual fee  
y = hourly fee

$$\begin{aligned}
 \text{Tony: } & x + 39y = 384 \\
 \text{Sandra: } & x + 51y = 456 \\
 \hline
 & -12y = -72 \\
 & y = 6
 \end{aligned}$$

$$\begin{aligned}
 x + 51y &= 456 \\
 x + 51(6) &= 456 \\
 x + 306 &= 456 \\
 x &= 456 - 306 \\
 x &= 150
 \end{aligned}$$

∴ The annual fee is \$150 and it cost \$6/h.

More Practice:

Pg. 62

#'s: 5,6(algebraically),7ab,8,12ab,14,16