

SOLUTIONS FOR SIMULTANEOUS EQUATIONS

Question 1

$$\begin{cases} y = -3 + 2x \\ y + 2x = -7 \end{cases}$$

- a) $y = mx + b$
- (i) $y = -3 + 2x$
 $\Rightarrow y = 2x - 3$
- (ii) $y + 2x = -7$
 $\Rightarrow y = -2x - 7$

b) Graph

$$y=2x-3$$

therefore

$$\begin{array}{ll} m & 2 \\ b & -3 \end{array}$$

x	y
-3	-9
-2	-7
-1	-5
0	-3
1	-1
2	1
3	3
4	5
5	7

$$Y=-2x-7$$

therefore

m -2

b -7

 x y

 -3 -1

 -2 -3

 -1 -5

 0 -7

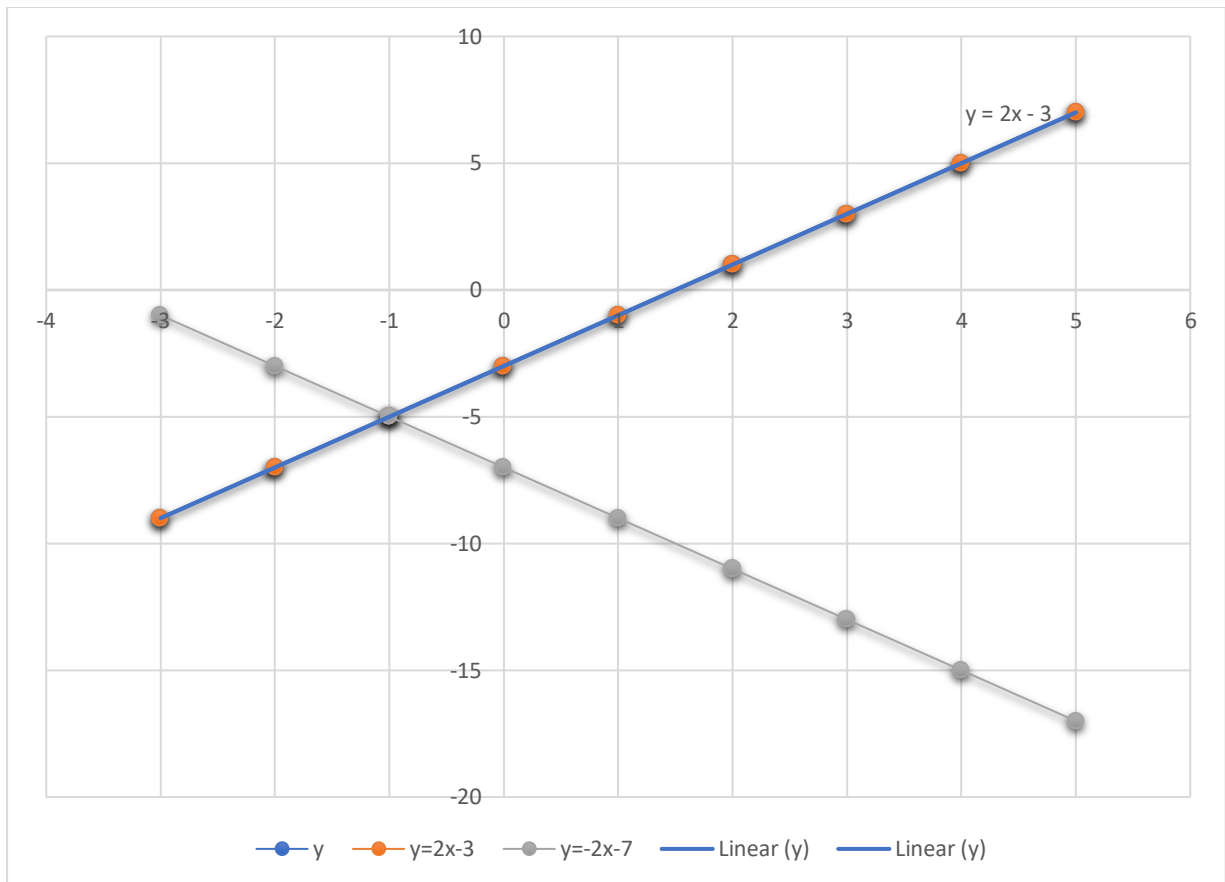
 1 -9

 2 -11

 3 -13

 4 -15

 5 -17



c)

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

Question 2

$$\begin{cases}
 5x + y = 7 \\
 2y = 6 - 6x
 \end{cases}$$

Solution

$$2y = 6 - 6x \Rightarrow y = 3 - 3x$$

$$5x + (3 - 3x) = 7 \Rightarrow 5x + 3 - 3x = 7$$

$$2x + 3 = 7 \Rightarrow 2x + 3 - 3 = 7 - 3$$

$$2x = 4 \Rightarrow x = 2$$

$$y = 3 - 3(2)$$

$$y = 3 - 6 \Rightarrow y = -3$$

$$(2, -3)$$

Question 3

$$\begin{cases} 2x + 4y = 3 \\ 4x - y = -3 \end{cases}$$

Solution

$$\begin{array}{r} 2(2x+4y=3) \\ 1(4x-y=-3) \\ \hline 4x+8y=6 \\ -4x-y=-3 \\ \hline 0+9y=9 \end{array} \Rightarrow 9y = 9$$

$$\Rightarrow y = 1$$

$$4x - 1 = -3$$

$$4x = -3 + 1$$

$$4x = -2 \Rightarrow x = -0.5$$

$$x = -0.5$$

$$y = 1$$

$$(-0.5, 1)$$

Question 4

$$\begin{cases} 4x + 4y = 2 \\ 4y + 4x = -3 \end{cases}$$

Solution

$$4x + 4y = 2 \Rightarrow 4x = 2 - 4y \Rightarrow x = \frac{1}{2} - y$$

$$4y + 4\left(\frac{1}{2} - y\right) = -3 \Rightarrow 4y + 2 - 4y = -3$$

$$4y - 4y + 2 = -3$$

$$0 + 2 = -3$$

$$0 = y$$

he two equations have infinite solutions

