2. Draw the graphs given below on a new set of axes:

a)

x	-2	-1	0	1	2
y	-5	-1	3	7	11

b)

x	-2	-1	0	1	2
y	6	1	-4	-9	-14

c)

x	-2	-1	0	1	2
y	13	10	7	4	1

d)

x	-2	-1	0	1	2
y	-2	$-1\frac{1}{2}$	-1	$-\frac{1}{2}$	0

e)

x	-2	-1	0	1	2
y	-125	-25	75	175	275

3. Draw each of the graphs given below on a new set of axes:

a) m = 3 and the y-intercept = -6

b) m = -7 and the x-intercept = 3

c) m = -3 and the point (2; -6)

d) m = 5 and the y-intercept = -8

e) m = 2 and the x-intercept = -5

4. Draw each of the graphs given below on a new set of axes:

a) $y = 8x + 9$

b) $y = -9x + 1$

c) $y = -5x + 2$

d) $y = x - 6$

5. For each of the graphs given below find the following:

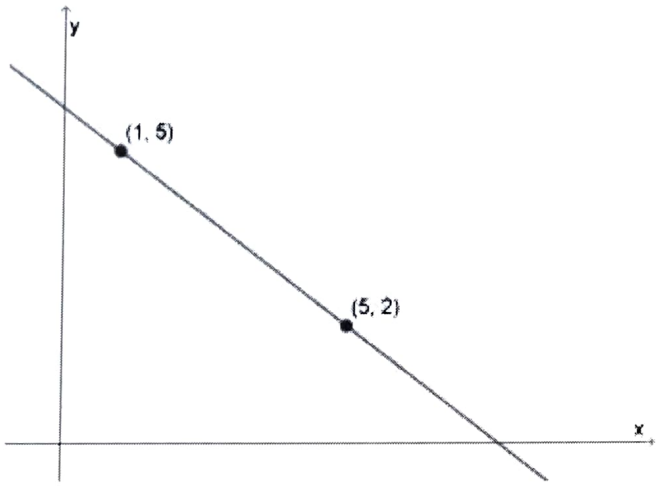
i) The gradient

ii) The equation of the straight line

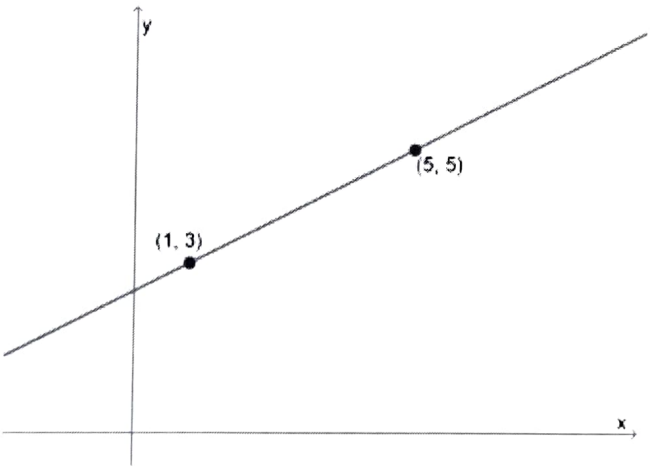
iii) The y-intercept

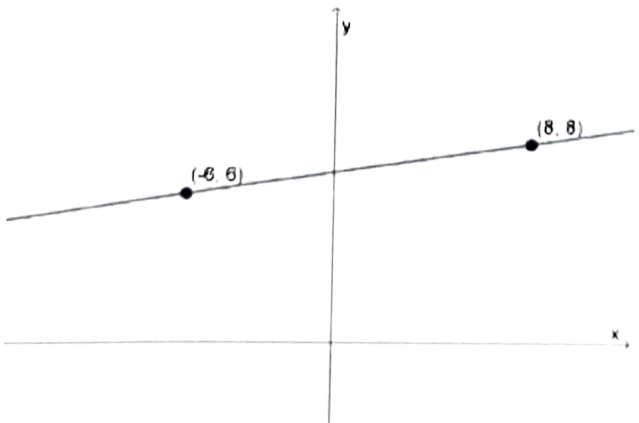
iv) The x-intercept

a)

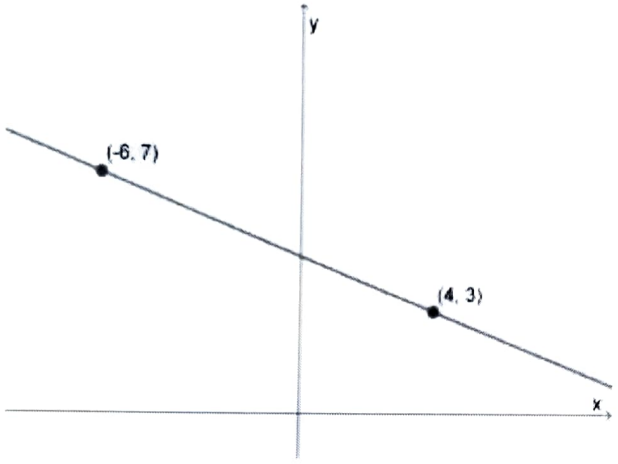


b)

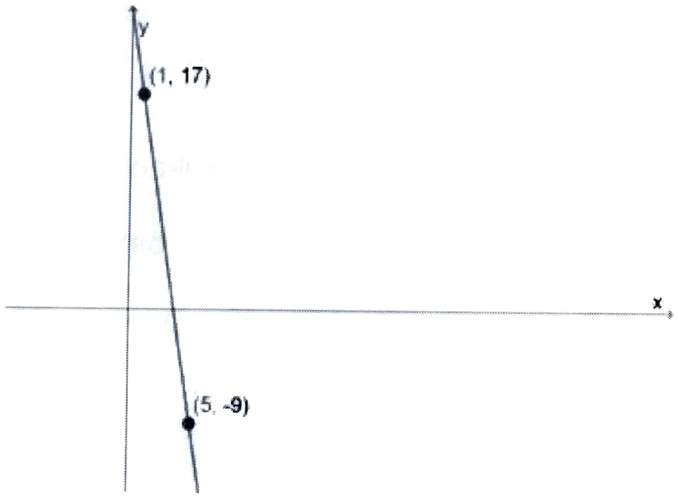




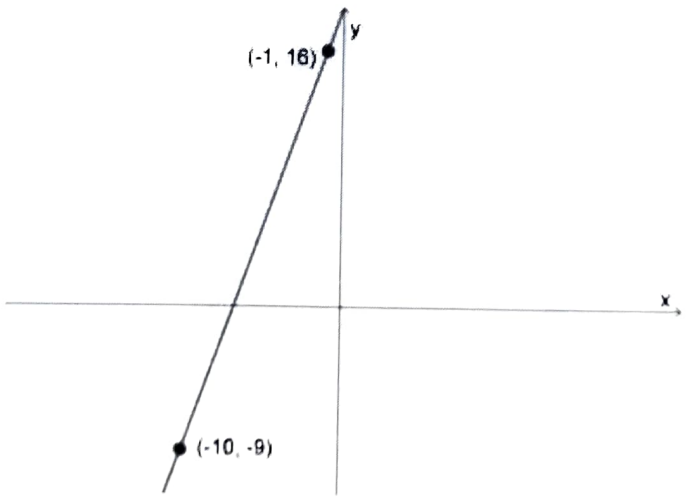
d)



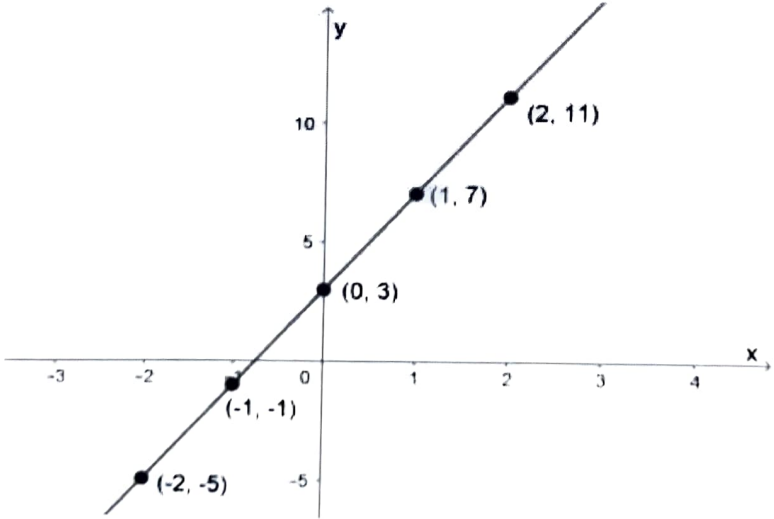
e)



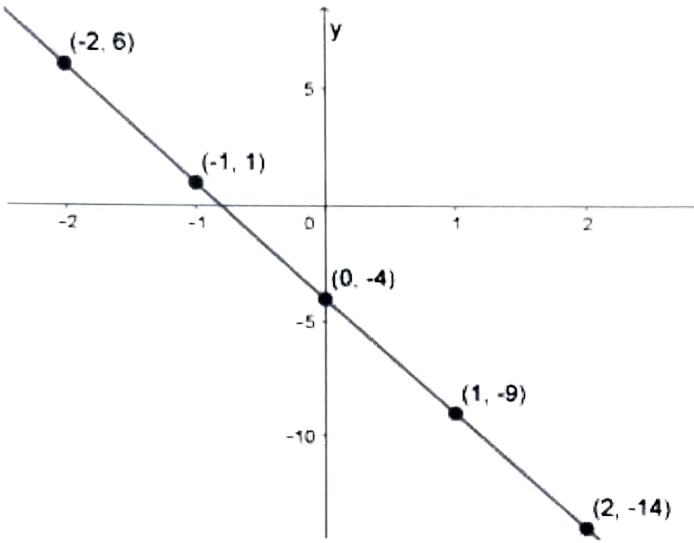
f)



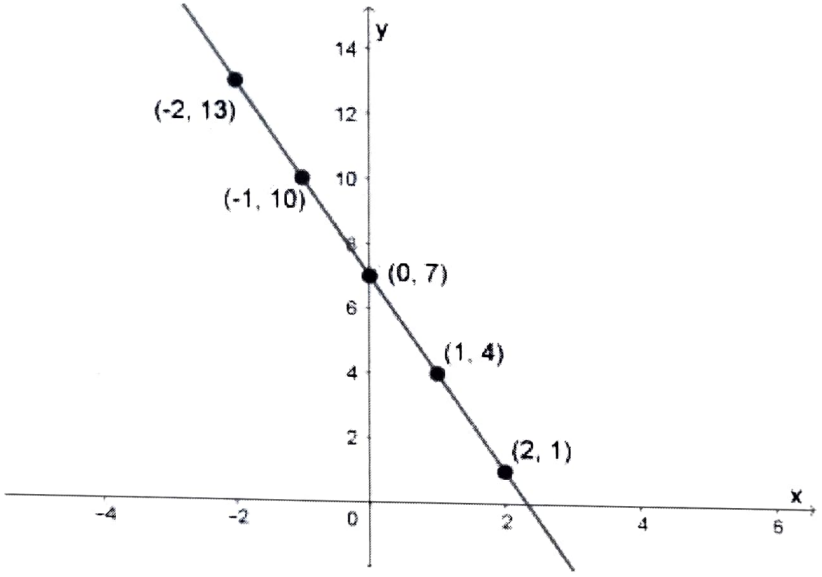
2. a)



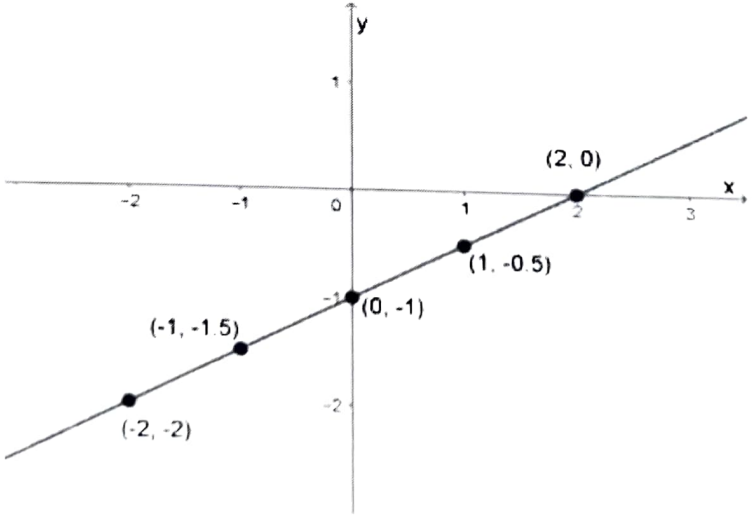
b)



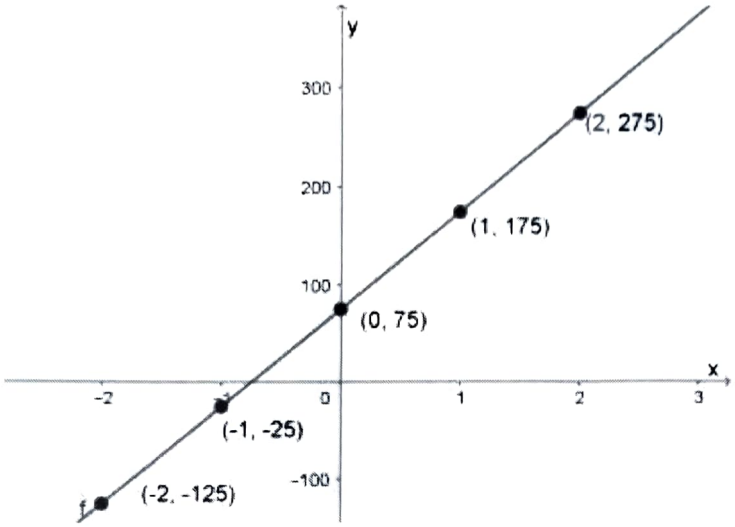
c)



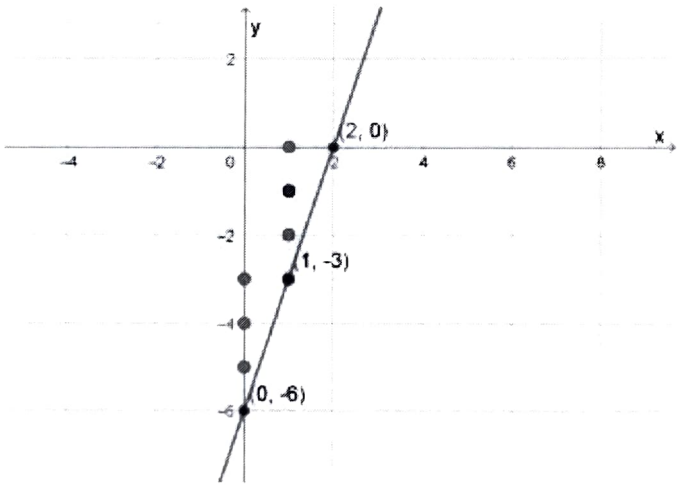
d)



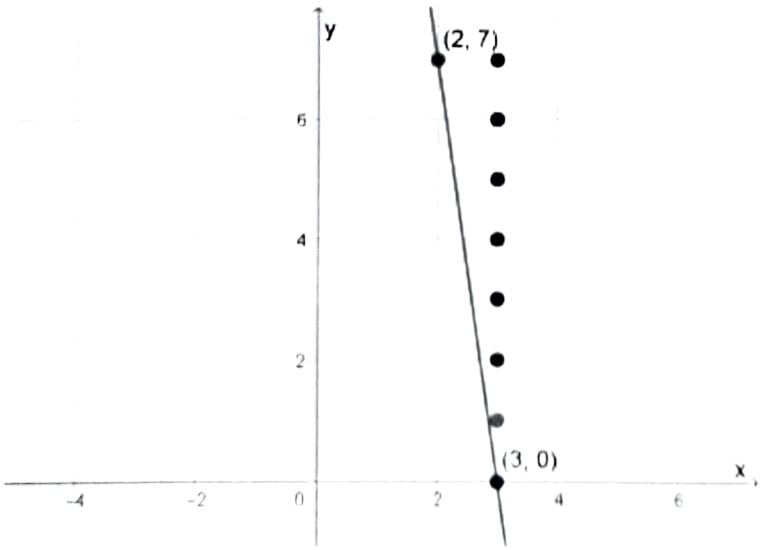
e)



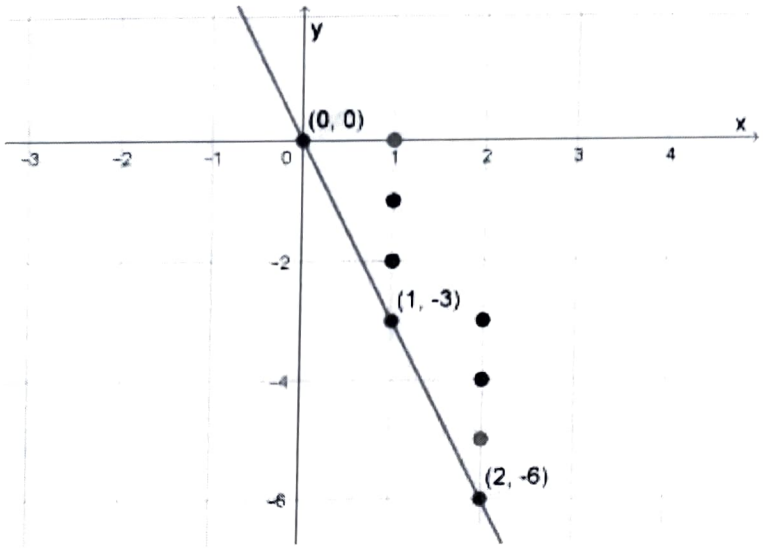
3. a) m = 3 and the y-intercept = -6



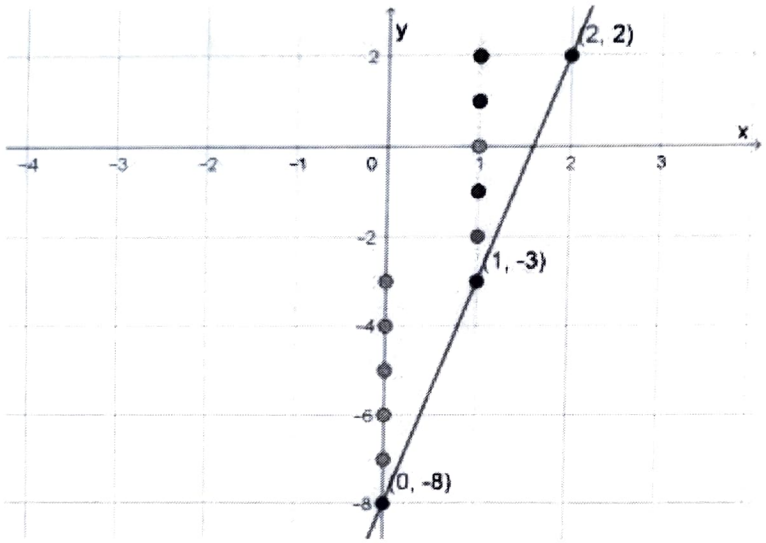
b) m = -7 and the x-intercept = 3



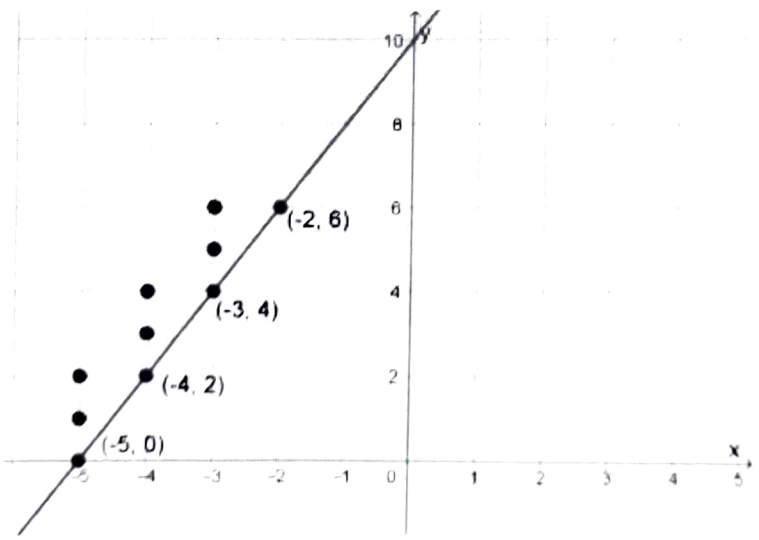
c) m = -3 and the point (2; -6)



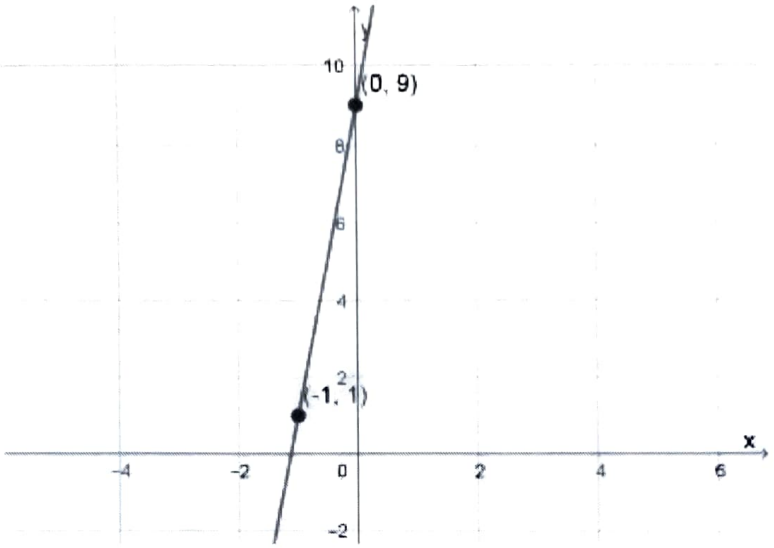
d) m = 5 and the y-intercept = -8



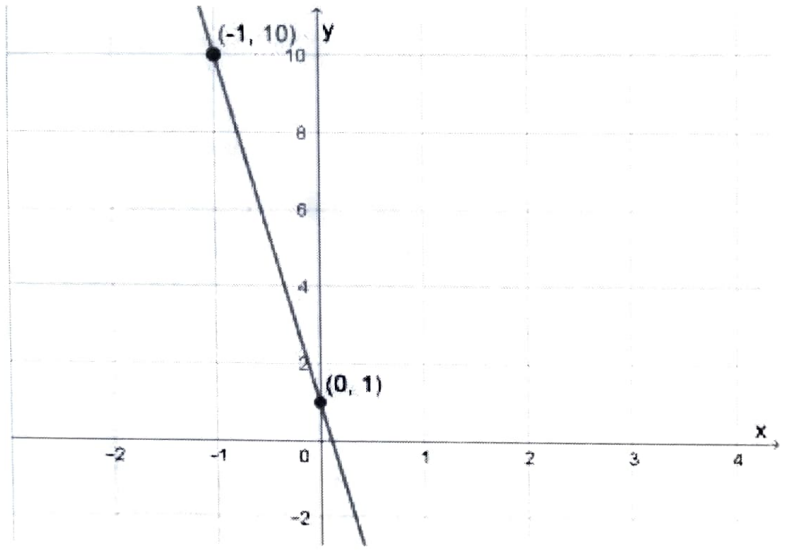
e) m = 2 and the x-intercept = -5



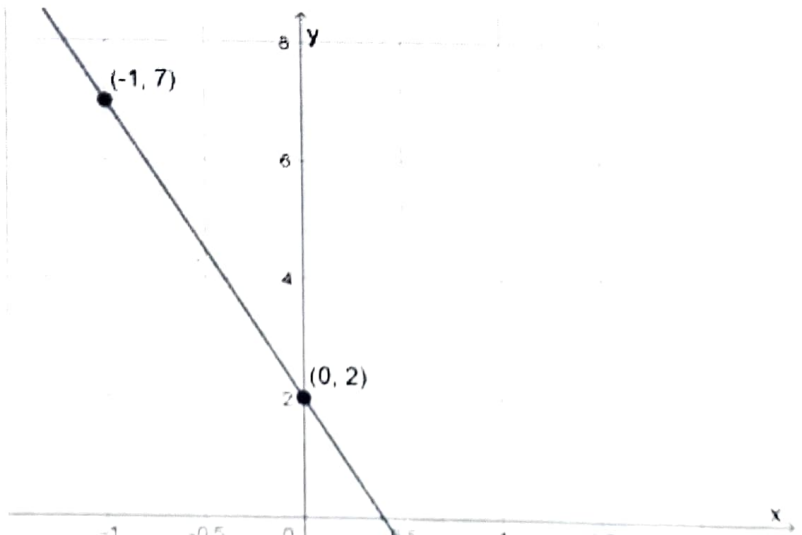
4. a) $y = 8x + 9$



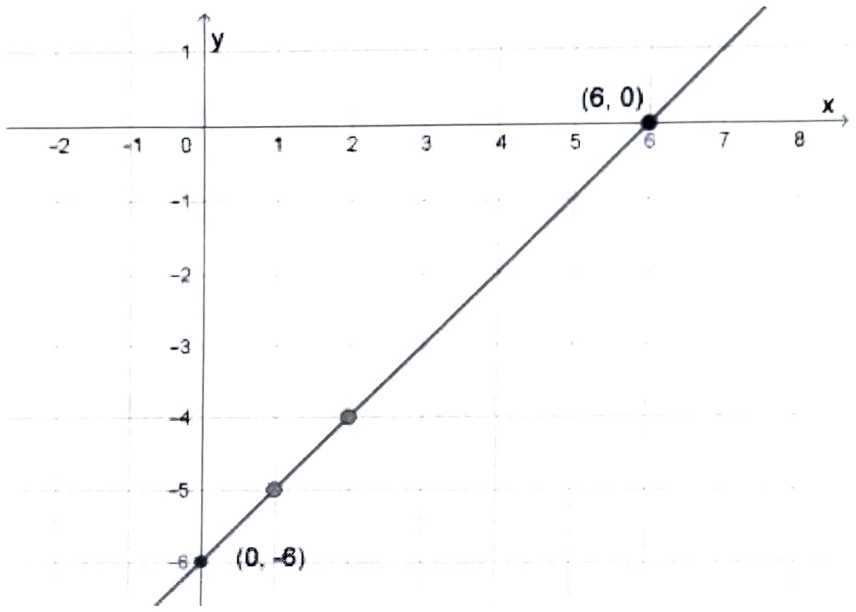
b) $y = -9x + 1$



c) $y = -5x + 2$



d) $y = x - 6$



5. a) i) The gradient

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\therefore m = \frac{5-2}{1-5}$$

$$\therefore m = -\frac{3}{4}$$

ii) The equation of the straight line

$y = mx + c$ we have $m = -\frac{3}{4}$

$\therefore y = -\frac{3}{4}x + c$ Substitute in either point. We've used (1; 5)

$\therefore 5 = -\frac{3}{4}(1) + c$

$\therefore c = 5\frac{3}{4}$

This means that the equation of the straight line is $y = -\frac{3}{4}x + 5\frac{3}{4}$

iii) The y-intercept

From iv) above the y-intercept is $\left(0; 5\frac{3}{4}\right)$

iv) The x-intercept

Make y = 0

$\therefore\ 0 = -\frac{3}{4}x + 5\frac{3}{4}$

$\therefore\ -5\frac{3}{4} = -\frac{3}{4}x$ (divide by $-\frac{3}{4}$)

$\therefore 7\frac{2}{3} = x$

The x-intercept is $\left(7\frac{2}{3}; 0\right)$

b) i) The gradient

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$\therefore m = \frac{5-3}{5-1}$

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

ii) The equation of the straight line

$y = mx + c$ and we have that $m = \frac{1}{2}$

$\therefore y = \frac{1}{2}x + c$ Substitute in either point. We've used (5; 5)

$\therefore 5 = \frac{1}{2}(5) + c$

$\therefore c = 2\frac{1}{2}$

$\therefore$ The equation of the straight line is given by $y = \frac{1}{2}x + 2\frac{1}{2}$

iii) The y-intercept

From ii) above, the y-intercept is $\left(0; 2\frac{1}{2}\right)$

iv) The x-intercept

Let y = 0

$\therefore 0 = \frac{1}{2}x + 2\frac{1}{2}$

$\therefore -2\frac{1}{2} = \frac{1}{2}x$

$\therefore -5 = x$

The x-intercept is (-5; 0)

c) i) The gradient

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$\therefore m = \frac{8-6}{8-(-6)}$

$\therefore m = \frac{1}{7}$

ii) The equation of the straight line

$y = mx + c$ and we have that $m = \frac{1}{7}$

$\therefore y = \frac{1}{7}x + c$ Substitute in either point. We've used (-6; 6)

$\therefore 6 = \frac{1}{7}(-6) + c$

$\therefore c = 6\frac{6}{7}$

$\therefore$ The equation of the straight line is given by $y = \frac{1}{7}x + 6\frac{6}{7}$

iii) The y-intercept

From ii) above, the y-intercept is $\left(0; 6\frac{6}{7}\right)$

iv) The x-intercept

Let y = 0

$\therefore 0 = \frac{1}{7}x + 6\frac{6}{7}$

$\therefore -6\frac{6}{7} = \frac{1}{7}x$

$\therefore x = -48$

The x-intercept is (-48; 0)

d) i) The gradient

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$\therefore m = \frac{-6-4}{7-3}$

$\therefore m = -2\frac{1}{2}$

ii) The equation of the straight line

$y = mx + c$ and we have that $m = -2\frac{1}{2}$

$\therefore y = -2\frac{1}{2}x + c$ Substitute in either point. We've used (-6; 7)

$\therefore 7 = -2\frac{1}{2}(-6) + c$

$\therefore c = -8$

$\therefore$ The equation of the straight line is given by $y = -2\frac{1}{2}x - 8$

iii) The y-intercept

From ii) above, the y-intercept is $(0; -8)$

iv) The x-intercept

Let y = 0

$\therefore 0 = -2\frac{1}{2}x - 8$

$\therefore 8 = -2\frac{1}{2}x$

$\therefore x = -3\frac{1}{5}$

The x-intercept is $\therefore \left(-3\frac{1}{5}; 0\right)$

e) i) The gradient

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$\therefore m = \frac{17-(-9)}{1-5}$

$\therefore m = -6\frac{1}{2}$

ii) The equation of the straight line

$y = mx + c$ and we have that $m = -6\frac{1}{2}$

$\therefore y = -6\frac{1}{2}x + c$ Substitute in either point. We've used (1; 17)

$\therefore 17 = -6\frac{1}{2}(1) + c$

$\therefore c = 23\frac{1}{2}$

$\therefore$ The equation of the straight line is given by $y = -6\frac{1}{2}x + 23\frac{1}{2}$

iii) The y-intercept

From ii) above, the y-intercept is $\left(0; 23\frac{1}{2}\right)$

iv) The x-intercept

Let y = 0

$\therefore 0 = -6\frac{1}{2}x + 23\frac{1}{2}$

$\therefore -23\frac{1}{2} = -6\frac{1}{2}x$

$\therefore x = 3\frac{8}{13}$

The x-intercept is $\left(3\frac{8}{13}; 0\right)$

f) i) The gradient

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$\therefore m = \frac{16-(-9)}{-1-(-10)}$

$\therefore m = 2\frac{7}{9}$

ii) The equation of the straight line

$y = mx + c$ and we have that $m = 2\frac{7}{9}$

$\therefore y = 2\frac{7}{9}x + c$ Substitute in either point. We've used (-1; 16)

$\therefore 16 = 2\frac{7}{9}(-1) + c$

$\therefore 18\frac{7}{9} = c$

$\therefore$ The equation of the straight line is given by $y = 2\frac{7}{9}x + 18\frac{7}{9}$

iii) The y-intercept

From ii) above, the y-intercept is $\left(0; 18\frac{7}{9}\right)$

iv) The x-intercept

Let y = 0

$0 = 2\frac{7}{9}x + 18\frac{7}{9}$

$\therefore\ -18\frac{7}{9} = 2\frac{7}{9}x$

$\therefore x = -6\frac{19}{25}$