

Name : \_\_\_\_\_

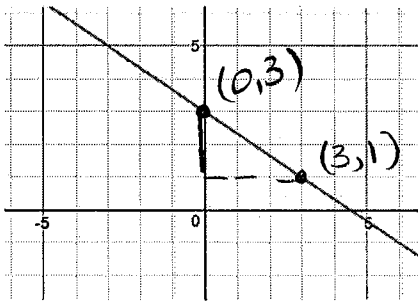
# Solutions

Exercise 3.4

Block 5/6

1. Write the equation of the line in point slope form and slope intercept form

a)



$$\text{slope} = -\frac{2}{3}$$

i) point slope form

$$y - y_1 = m(x - x_1)$$
$$y - 3 = -\frac{2}{3}(x - 0)$$

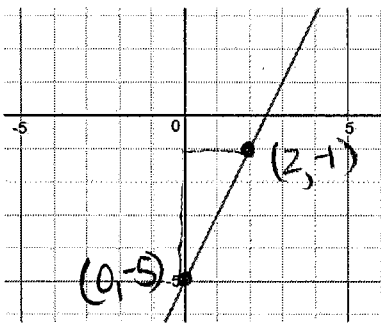
or

$$y - 1 = -\frac{2}{3}(x - 3)$$

ii) slope intercept form

$$y = mx + b$$
$$y = -\frac{2}{3}x + 3$$

b)



$$\text{slope} = \frac{4}{2} = 2$$

i) point slope form

$$y - y_1 = m(x - x_1)$$
$$y - (-5) = 2(x - 0)$$
$$y + 5 = 2(x - 0)$$

or

$$y - (-1) = 2(x - 2)$$
$$y + 1 = 2(x - 2)$$

ii) slope intercept form

$$y = mx + b$$
$$y = 2x - 5$$

2. Write the equation of a line that passes through the point A (5, -3) and is parallel to the line  $y = -\frac{1}{2}x + 2$ .

Slope =  $-\frac{1}{2}$

a) point slope form

$$y - (-3) = -\frac{1}{2}(x - 5)$$

$$y + 3 = -\frac{1}{2}(x - 5)$$

b) slope intercept form

$$y + 3 = -\frac{1}{2}(x - 5)$$

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

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

$$y = -\frac{1}{2}x + \frac{5}{2} - \frac{6}{2}$$

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

3. Write the equation of a line passing through the point A (-1, 4) and is perpendicular to the line  $y = \frac{2}{3}x + 6$ .

Slope =  $\frac{2}{3}$  slope perpendicular, slope =  $-\frac{3}{2}$

a) point slope form

$$y - (4) = -\frac{3}{2}(x - (-1))$$

$$y - 4 = -\frac{3}{2}(x + 1)$$

b) slope intercept form

$$y - 4 = -\frac{3}{2}(x + 1)$$

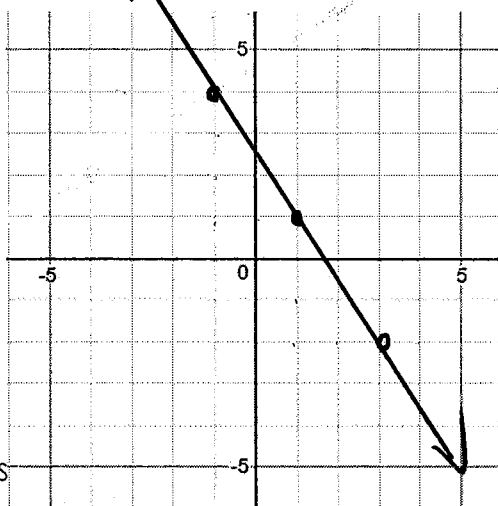
$$y - 4 = -\frac{3}{2}x + \frac{3}{2}$$

$$y = -\frac{3}{2}x - \frac{3}{2} + 4$$

$$y = -\frac{3}{2}x - \frac{3}{2} + \frac{8}{2}$$

$$y = -\frac{3}{2}x + \frac{5}{2}$$

c) Graph the line



4. Write the equation for each line

a) An x-intercept of 4 and parallel to the line  $y = \frac{3}{5}x - 7$ .

i) point slope form <sup>point</sup>  $(4,0)$   $m = \frac{3}{5}$  ii) slope intercept form

$$y - 0 = \frac{3}{5}(x - 4)$$

$$y = \frac{3}{5}(x - 4)$$

$$y = \frac{3}{5}(x - 4)$$

$$y = \frac{3}{5}x - \frac{12}{5}$$

b) The line passes through  $F(4,1)$  and is perpendicular to a line with an x-intercept of 3 and y-intercept of 6.

i) point slope form

slope of old line  
 $(3,0)$   $(0,6)$

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

$$m = \frac{6 - 0}{0 - 3}$$

$$m = \frac{6}{-3} = -2$$

$\perp$  slope  $m = \frac{1}{2}$

$$m = \frac{1}{2} \quad F(4,1)$$

$$y - 1 = \frac{1}{2}(x - 4)$$

ii) slope intercept form

$$y - 1 = \frac{1}{2}(x - 4)$$

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

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

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

5. Write the equation of a line that passes through the given points. Write the equation in point slope form and slope intercept form. Graph the line.

and  
 $A(-4, 7)$  and  $B(5, -2)$   
 $x_1, y_1$      $x_2, y_2$

i) point slope form

$$y - 7 = -1(x - (-4))$$

$$y - 7 = -1(x + 4)$$

or

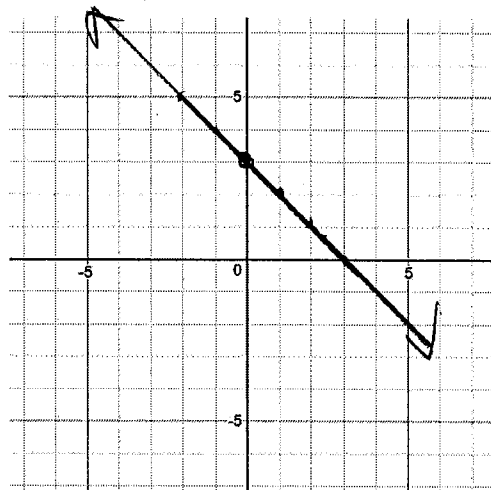
$$y - (-2) = -1(x - 5)$$

$$y + 2 = -1(x - 5)$$

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

$$m = \frac{-2 - 7}{5 - (-4)}$$

$$m = \frac{-9}{9} = -1$$



ii) slope intercept form

$$y - 7 = -1(x + 4)$$

$$y - 7 = -x - 4$$

$$y = -x - 4 + 7$$

$$y = -x + 3$$

or

$$y + 2 = -1(x - 5)$$

$$y + 2 = -x + 5$$

$$y = -x + 5 - 2$$

$$y = -x + 3$$

same