LINE

1 11^{th} Maths - EXERCISE-10.2

1. Passing through the point (– 4, 3) with slope $\frac{1}{2}$

2 SOLUTION

Given points are (-4,3), and slope $m = \frac{1}{2}$

The line formula in matrix form

$$n^\top x = c \tag{1}$$

$$\tag{2}$$

$$n = \begin{pmatrix} m \\ -1 \end{pmatrix} \tag{3}$$

$$= \begin{pmatrix} \frac{1}{2} \\ -1 \end{pmatrix} \tag{4}$$

$$c = \frac{mx_1 - y_1}{2} \tag{5}$$

$$= 2\left(\tfrac{1}{2} \times -4 - 3\right) \tag{6}$$

$$= \frac{-10}{2} \tag{7}$$

$$= -5 \tag{8}$$

$$n^\top x = c \tag{9}$$

$$\begin{pmatrix} \frac{1}{2} \\ -1 \end{pmatrix}^\top x = -5 \tag{10}$$

$$= x - 2y = -10 \tag{11}$$

$$\implies x - 2y + 10 = 0 \tag{12}$$

3 Figure

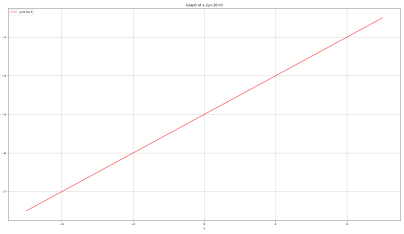

Figure 1: projection vector