Parallel Lines

11^{th} Maths - Chapter 10

This is Problem-3 from Exercise 10.4

1. Find the equations of the lines, which cut-off intercepts on the axes whose sum and product are 1 and -6,resspectively.

1 Solution

Let the x intercept be a and the y intercept be b ,Then

$$\big(a+b\big) = 1 \tag{1}$$
$$\big(ab\big) = -6 \tag{2}$$

upon simplifying (1) and (2)

$$\binom{a}{b} = \binom{3}{-2}, \binom{-2}{3} \tag{3}$$

Thus,the posiible equations of the line as

$$\mathbf{n} = \binom{2}{-3} \tag{4}$$
$$\big(2,-3\big)\left(\mathbf{x} - \binom{3}{-2}\right) = 6 \tag{5}$$
$$\big(2,-3\big)\,\mathbf{x} = 6 \tag{6}$$

or

$$\mathbf{n} = \begin{pmatrix} -3 \\ 2 \end{pmatrix} \tag{7}$$

$$\begin{pmatrix} -3, 2 \end{pmatrix} (\mathbf{x} - \begin{pmatrix} -2 \\ 3 \end{pmatrix}) = 6 \tag{8}$$

$$\begin{pmatrix} -3, 2 \end{pmatrix} \mathbf{x} = 6 \tag{9}$$

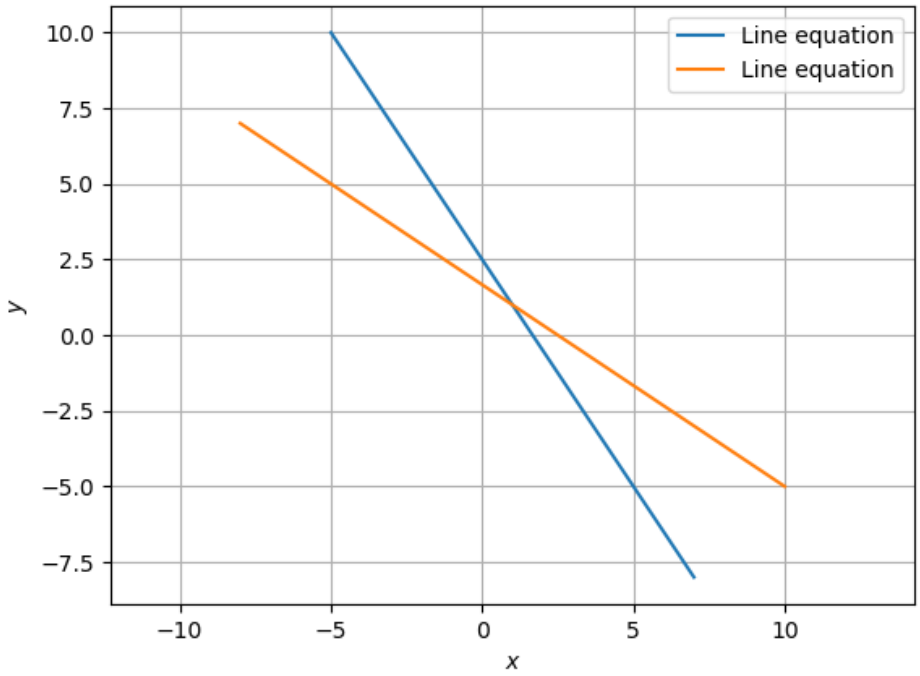

Figure 1