

# Straight Lines

## 1 11<sup>th</sup> Maths - Exercise 10.3.8

1. Find the equation of line perpendicular to the line  $x - 7y + 5 = 0$  and having  $x$  intercept 3

## 2 Solution

From given equation

$$m = 1/7, c = 5/7 \quad (1)$$

$$\text{where } \mathbf{m} = \begin{pmatrix} 1 \\ 1/7 \end{pmatrix} \quad (2)$$

the equation of line perpendicular having  $x$  intercept 3 is given by

$$\mathbf{m}^\top (\mathbf{x} - \mathbf{A}) = 0 \quad (3)$$

where  $\mathbf{A}$  and  $\mathbf{m}$  is

$$\mathbf{m}^\top = \begin{pmatrix} 1 & 1/7 \end{pmatrix} \quad (4)$$

$$\mathbf{A} = \begin{pmatrix} 3 \\ 0 \end{pmatrix} \quad (5)$$

Substituting the value of  $\mathbf{m}$  and  $\mathbf{A}$  in (??)

$$\begin{pmatrix} 1 & 1/7 \end{pmatrix} \left( \mathbf{x} - \begin{pmatrix} 3 \\ 0 \end{pmatrix} \right) = 0 \quad (6)$$

$$\begin{pmatrix} 1 & 1/7 \end{pmatrix} \mathbf{x} = 21 \quad (7)$$

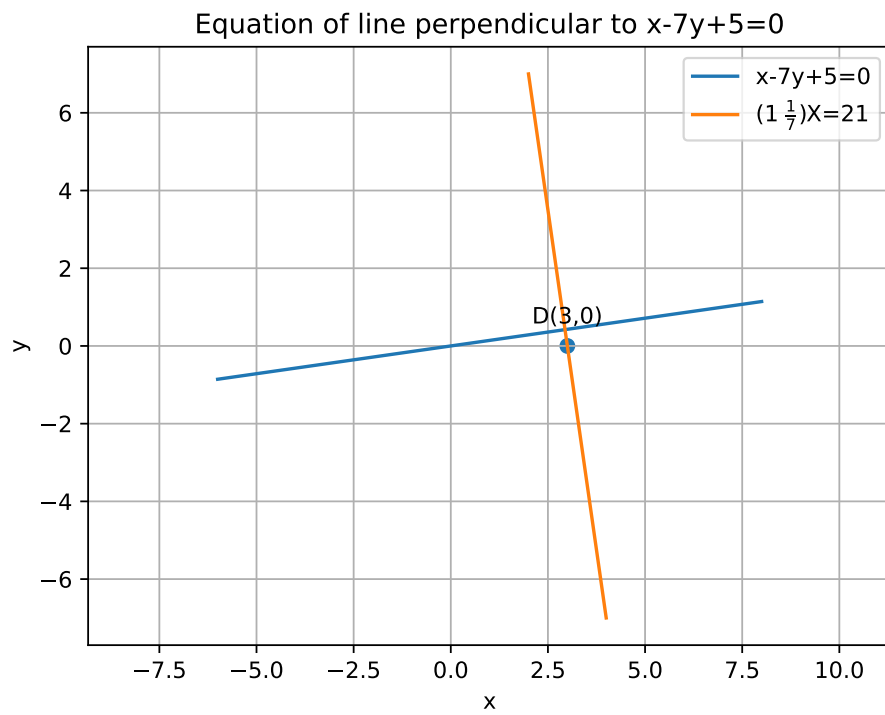


Figure 1