ASSIGNMENT 4

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Download all python codes from

https://github.com/ponnaboinakalpana12/ASSIGNMENT4/

and latex-tikz codes from

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1 Question No 2.18

Find the distance between the parallel lines

$$\begin{pmatrix}15 & 8\end{pmatrix}\mathbf{x} = 34 \tag{1.0.1}$$

$$\begin{pmatrix}15 & 8\end{pmatrix}\mathbf{x} = -31 \tag{1.0.2}$$

2 SOLUTION

The formula for calculating the distance between the two parallel lines is

$$d = \frac{|c_2 - c_1|}{\|\mathbf{n}\|} \tag{2.0.1}$$

By substituting the given values

$$\mathbf{n} = \begin{pmatrix}15\\8\end{pmatrix} \quad c_1 = 34, c_2 = -31 \tag{2.0.2}$$

we get

$$d = \frac{|-31 - 34|}{\sqrt{15^2 + 8^2}} \tag{2.0.3}$$

$$d = \frac{|-65|}{\sqrt{289}} \tag{2.0.4}$$

$$d = \frac{65}{17} \tag{2.0.5}$$

Thus, the distance between the two parallel lines is

$$d = 3.82 \tag{2.0.6}$$

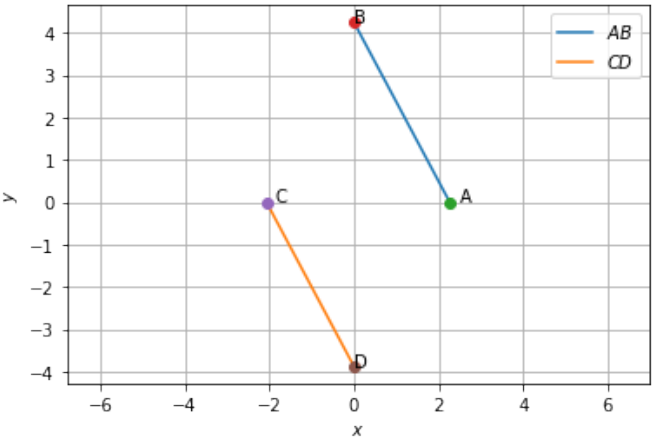

Fig. 2.1: Parallel lines