

# ASSIGNMENT 4

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Download all python codes from

[https://github.com/ponnaboinakalpana12/  
ASSIGNMENT4/](https://github.com/ponnaboinakalpana12/ASSIGNMENT4/)

and latex-tikz codes from

[https://github.com/ponnaboinakalpana12/  
ASSIGNMENT4/](https://github.com/ponnaboinakalpana12/ASSIGNMENT4/)

## 1 QUESTION No 2.18

Find the distance between the parallel lines

$$(15 \ 8)\mathbf{x} = 34 \quad (1.0.1)$$

$$(15 \ 8)\mathbf{x} = -31 \quad (1.0.2)$$

## 2 SOLUTION

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

$$d = \frac{|c_2 - c_1|}{\|\mathbf{n}\|} \quad (2.0.1)$$

By substituting the given values

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

we get

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

$$d = \frac{|-65|}{\sqrt{289}} \quad (2.0.4)$$

$$d = \frac{65}{17} \quad (2.0.5)$$

Thus, the distance between the two parallel lines is

$$d = 3.82 \quad (2.0.6)$$