

Assignment 1

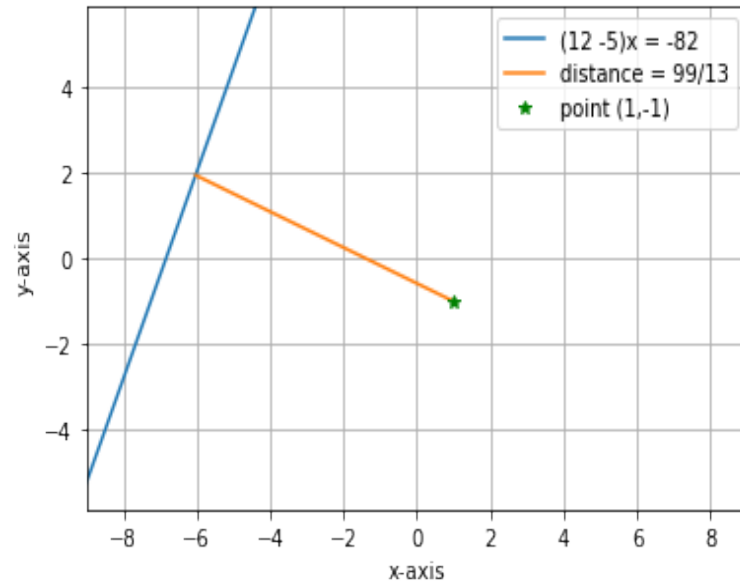
vinay kumar

Download the python code from

<https://github.com/jvinaykumar12/EE5609/tree/master/Assignment1>

and latex-file codes from

<https://github.com/jvinaykumar12/EE5609/tree/master/Assignment1>



1 QUESTION No.33

Find the distance of the point $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$ from the line $(12 \ -5)\mathbf{x} = -82$

2 EXPLANATION

The formula for calculating the distance between the point and the given line is

$$d = \frac{|c - \mathbf{n}^T \mathbf{A}|}{\|\mathbf{n}\|} \quad (2.0.1)$$

By substituting the given values

$$\mathbf{A} = \begin{pmatrix} 1 \\ -1 \end{pmatrix} \quad \mathbf{n} = \begin{pmatrix} 12 \\ -5 \end{pmatrix} \quad c = -82 \quad (2.0.2)$$

we get

$$|c - \mathbf{n}^T \mathbf{A}| = 99 \quad (2.0.3)$$

Thus, the distance between the point and the line is

$$d = \frac{99}{13} \quad (2.0.4)$$