

1.1.9.7

EE24BTECH11032 - John Bobby

Question: The distance of the point $(-6, 8)$ from the origin is

Solution: The length of a vector is defined as

Variable	Description
$\mathbf{A}(-6, 8)$	coordinates of point
$\mathbf{O}(0, 0)$	coordinates of origin
x	general vector

TABLE 0: Input Parameters

$$\|x\| = \sqrt{x^\top x} \quad (0.1)$$

$$A = \begin{pmatrix} -6 \\ 8 \end{pmatrix} \quad (0.2)$$

$$A^\top A = (-6, 8) \begin{pmatrix} -6 \\ 8 \end{pmatrix} = 6^2 + 8^2 = 100 \quad (0.3)$$

$$\|A\| = \sqrt{100} = 10 \quad (0.4)$$

\therefore Length of line segment \mathbf{OA} is 10 units

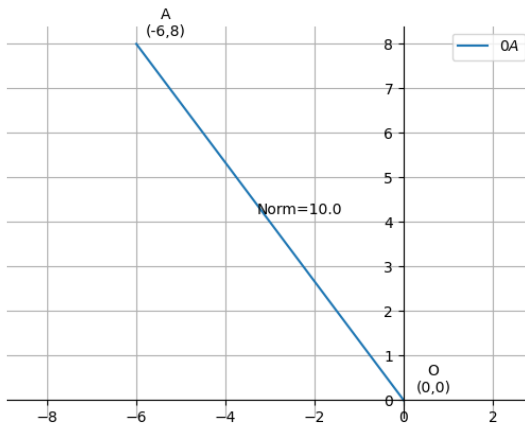


Fig. 0.1: Plot of point $(6, -8)$