1.8.14

EE24BTECH11016 - Dhwanith M Doddahundi

Question:
The distance of the point $\mathbf{P}(-6,8)$ from the origin is
Solution:

Variable	Description
$\mathbf{P}(-6,8)$	coordinates of first point
$\mathbf{O}(0,0)$	coordinates of second point
d	Distance between point $\mathbf{P}$ and $\mathbf{O}$

TABLE 0: Input parameters

$$d = \|\mathbf{P}-\mathbf{O}\| \tag{1}$$

$$\implies d = \sqrt{(\mathbf{P}-\mathbf{O})^{\top}(\mathbf{P}-\mathbf{O})} \tag{2}$$

$$\implies d = \sqrt{\begin{pmatrix}-6\\8\end{pmatrix}\begin{pmatrix}-6 & 8\end{pmatrix}} \tag{3}$$

$$\implies d = \sqrt{(-6)^2+8^2} \tag{4}$$

$$\implies d = \sqrt{100} \tag{5}$$

$$\implies d = 10 \tag{6}$$

The distance of the point $\mathbf{P}(-6,8)$ from the origin is 10 units.

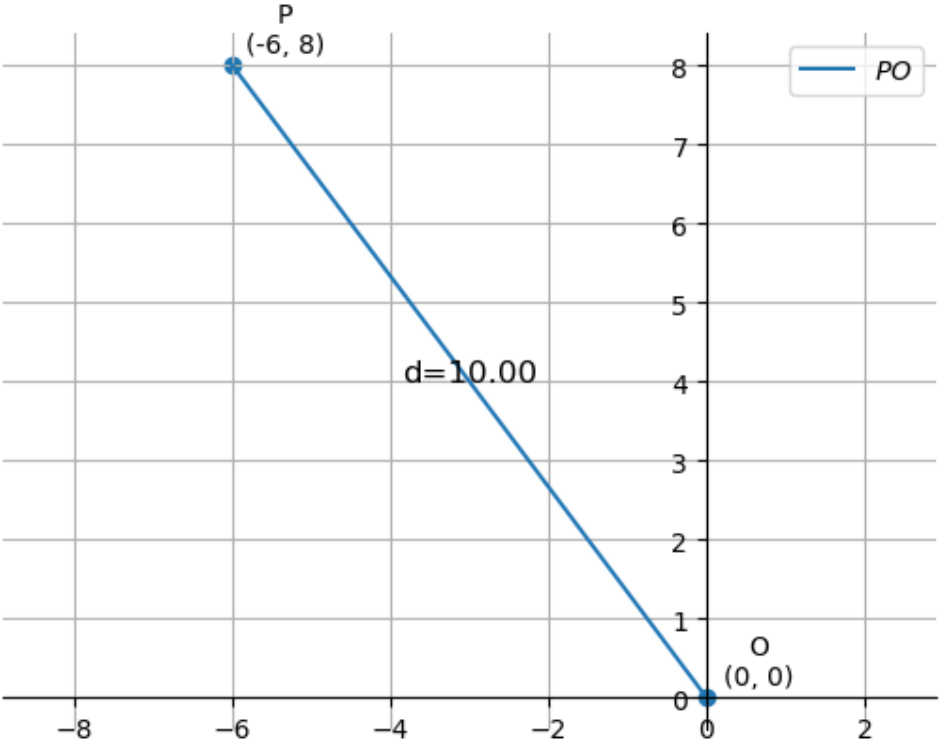

Fig. 0: Distance between points P and O