

4.8.19

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Question

If the distance of the point $(1, 1, 1)$ from the plane $x - y + z + \lambda = 0$ is $\frac{5}{\sqrt{3}}$, find the value(s) of λ .

Equation of plane is given by

$$n^T x = -\lambda; \quad (1)$$

where $n^T = (1 \quad -1 \quad 1)$.

Solution

Let the distance of point $P(1,1,1)$ from the plane is d .

$$d = \frac{||n^T P + \lambda||}{||n||} \quad (2)$$

then value of λ is given by

$$\lambda = +d||n|| - n^T P \text{ or} \quad (3)$$

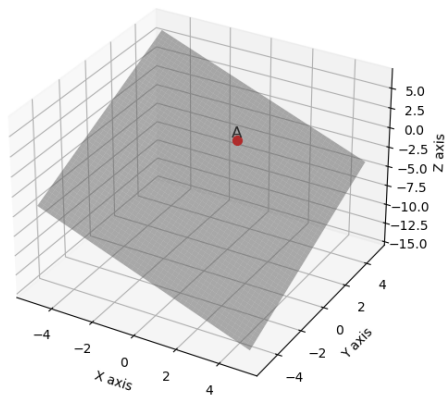
$$\lambda = -d||n|| - n^T P \quad (4)$$

Solving these Equations we get

$$\implies \lambda = +4 \quad (5)$$

$$= -6 \quad (6)$$

3D Plane and Point A



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