EE25btech11028 - J.Navya sri

Question:

Write the coordinates of a point **P** on the x-axis which is equidistant from the points A(-2,0) and B(6,0).

Solution:

Let the point P be on the x-axis with coordinates:

$$P(x,0) \tag{1}$$

Since P is equidistant from A and B, their distances from P are equal:

$$PA = PB \tag{2}$$

Using the distance formula:

$$\sqrt{(x+2)^2 + (0-0)^2} = \sqrt{(x-6)^2 + (0-0)^2}$$
 (3)

This simplifies to:

$$|x + 2| = |x - 6| \tag{4}$$

Consider two cases:

Case 1:

$$x + 2 = x - 6 \implies 2 = -6$$
 (Not possible) (5)

Case 2:

$$x + 2 = -(x - 6) \tag{6}$$

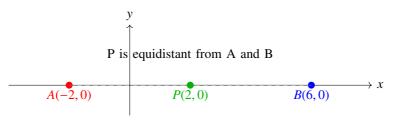
$$x + 2 = -x + 6$$

$$2x = 4 \implies x = 2$$

Therefore, the coordinates of point P are:

$$(2,0) \tag{7}$$

Graphical Representation:



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