

1.9.17

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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:

$$P(x, 0) \quad (1)$$

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

$$PA = PB \quad (2)$$

Using the distance formula:

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

This simplifies to:

$$|x+2| = |x-6| \quad (4)$$

Consider two cases:

Case 1:

$$x+2 = x-6 \Rightarrow 2 = -6 \quad (\text{Not possible}) \quad (5)$$

Case 2:

$$x+2 = -(x-6) \quad (6)$$

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

$$2x = 4 \Rightarrow x = 2$$

Therefore, the coordinates of point P are:

$$\boxed{(2, 0)} \quad (7)$$

Graphical Representation:

