

## STRAIGHT LINES

### Exercise 7.1

Q3. AD and BC are equal perpendiculars to a line segment. Show that CD bisects AB.

### Solution

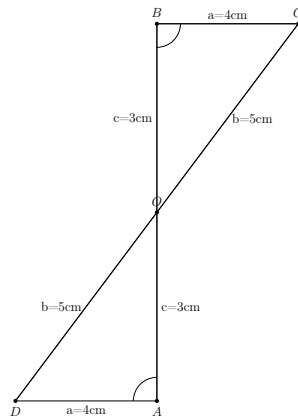


Figure 0-1: Figure

Let

$$AD = a = 4cm \quad (1)$$

$$OA = c = 3cm \quad (2)$$

$$OD = b \quad (3)$$

Apply baudhayana theorem to find b for a triangle

$$b^2 = a^2 + c^2 \quad (4)$$

$$b = \sqrt{a^2 + c^2} = \sqrt{4^2 + 3^2} = 5cm \quad (5)$$

- From the above figure, In  $\triangle BOC$  and  $\triangle AOD$  and from given information

$$\angle BOC = \angle AOD \quad (6)$$

$$\angle CBO = \angle DAO \quad (7)$$

$$BC = AD = b \quad (8)$$

$$\therefore \triangle BOC \cong \triangle AOD \quad (9)$$

$$\therefore OB = OA = c \quad (10)$$

Thus, CD bisects AB and O is the mid-point of AB.

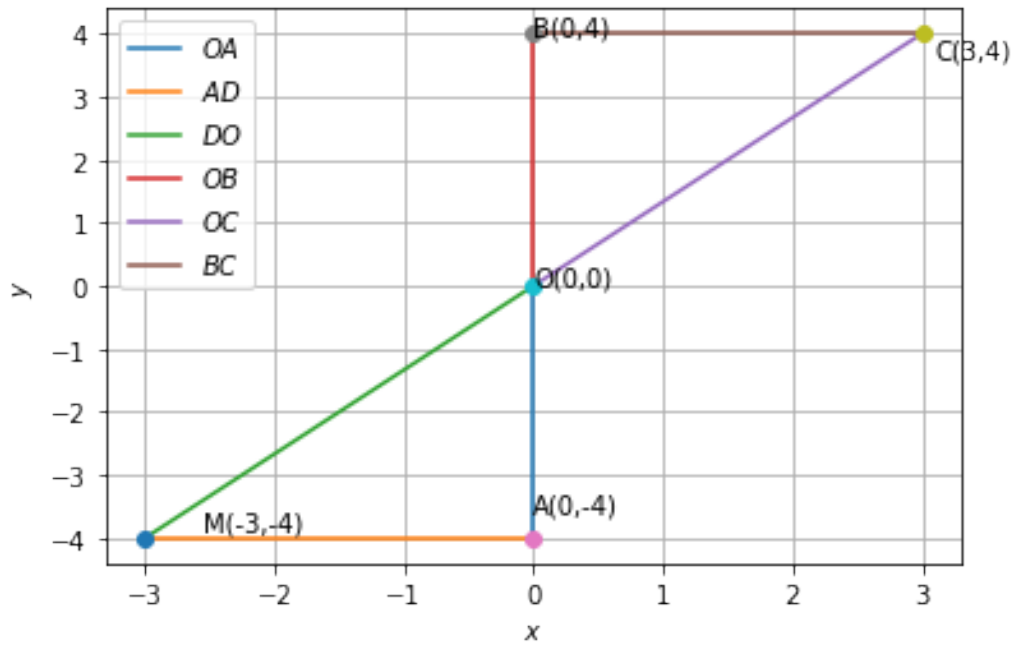


Figure 0-2: