MATHEMATICS

Assignment

1) A 2.6 metres long rod leans against a wall, its foot is 1 metre from the wall. When the foot is moved a little away from the wall, its upper end slides the same length down. How much farther is the foot moved?

Ans)

Using Pythagoras principle,

$$AC^2 + 1^2 = (2.6)^2$$

$$AC^2 = (2.6)^2 - 1^2$$

$$= 6.76 - 1$$

$$AC^2 = 5.76$$

$$AC = \sqrt{5.76} = 2.4$$

Let the distance the foot is moved $= x$

$$AD = 1 + x$$

$$AE = 2.4 - x$$

Using Pythagoras principle,

$$(1+x)^2 + (2.4-x)^2 = (2.6)^2$$

$$1 + 2x + x^2 + 5.76 - 4.8x + x^2 = 6.76$$

$$2x^2 - 2.8x = 0$$

$$x^2 - 1.4x = 0 \text{ (divided by 2)}$$

$$\therefore x^2 = 1.4x$$

$$x \times x = 1.4 \times x$$

$$\therefore x = 1.4$$

Distance the foot moved $= 1.4$ m