

TOPIC

Mathematics – Section I – Question 16

QUESTION

A straight line goes through the point $(2, -3)$ and is perpendicular to $y = 5x - 7$. The equation of the straight line is

- (A) $0.2x - 2.6$
- (B) $-0.2x - 2.6$
- (C) $0.2x - 3.4$
- (D) $-0.2x + 2.6$

HINT

If two straight lines are perpendicular to each other, and the slope of the two straight lines are m_1 and m_2 , then

$$m_1 m_2 = -1$$

SOLUTION

If two straight lines are perpendicular to each other, and the slope of the two straight lines are m_1 and m_2 , then

$$m_1 m_2 = -1$$

Since the slope of $5x - 7$ is 5 , $m_1 = 5$, then

$$\begin{aligned} m_2 &= -\frac{1}{5} \\ &= -0.2 \end{aligned}$$

The equation of the line then is

$$\begin{aligned} y &= m_2 x + c \\ &= -0.2x + c \end{aligned}$$

But this straight line goes through $(2, -3)$

To give

$$\begin{aligned} -3 &= -0.2(2) + c \\ c &= -2.6 \end{aligned}$$

Hence

$$y = -0.2x - 2.6$$

is the equation of the straight line that goes through $(2, -3)$ and is perpendicular to $y = 5x - 7$

ANSWER

(B)

CONTRIBUTOR

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