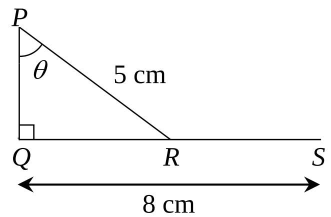
CHAPTER 9: TRIGONOMETRY II

Cloned SPM Question (2006, Paper 1)

In the diagram, R is the midpoint of the straight line SQ.



The value of cos θ is

A $\frac{4}{3}$ **C** $\frac{3}{4}$

B $\frac{4}{5}$ **D** $\frac{3}{5}$

Solution

$RQ = \frac{8}{2}$ = 4 cm since R is the midpoint of SQ.

Using Pythagoras' theorem on ΔPQR,

$$PQ^2 = 5^2 - 4^2$$
$$= 25 - 16$$
$$= 9$$
$$PQ = \sqrt{9}$$
$$= 3 \text{ cm}$$

Thus, $\cos\theta = \frac{PQ}{PR}$

$$= \frac{3}{5}$$

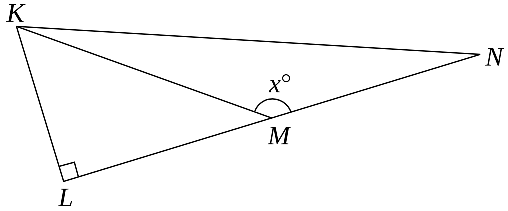
Answer: **D**

Pointers

- Since $\cos\theta = \frac{\text{adjacent } PQ}{\text{hypotenuse } PR}$, the length of PQ needs to be determined first by using Pythagoras's theorem.

Cloned SPM Question (2006, Paper 1)

In the diagram, *KLN* is a right-angled triangle. It is given that *KM* = 15 cm, *LN* = 24 cm and *M* is the midpoint of *LN*.



Find the value of tan *x*.

A $-\frac{3}{5}$

B $-\frac{4}{5}$

C $-\frac{3}{4}$

D $-\frac{4}{3}$

Solution

$LM = \frac{24}{2} = 12$ cm

$$\begin{aligned} KL^2 &= KM^2 - LM^2 \\ &= 15^2 - 12^2 \\ &= 81 \\ KL &= \sqrt{81} \\ &= 9 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{Thus, } \tan x° &= -\tan \angle KML \\ &= -\frac{KL}{LM} \\ &= -\frac{9}{12} \\ &= -\frac{3}{4} \end{aligned}$$

Answer: **C**

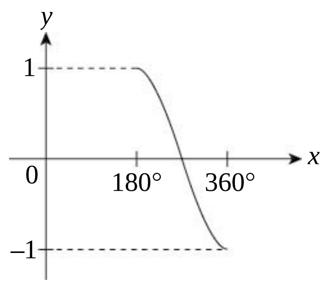
Pointers

- Note that *x* is an obtuse angle in quadrant II. Thus, tan *x*° is negative with $\tan x° = -\tan \angle KML = -\frac{KL}{LM}$
- Since Δ*KLM* is a right-angled triangle, *KL* can be determined by using Pythagoras' theorem after calculating the length of *LM*.

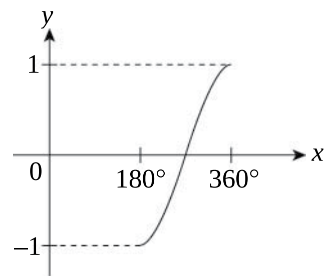
Cloned SPM Question (2006, Paper 1)

Which of the following represents the graph of $y = \cos x$ for $180° \leq x \leq 360°$?

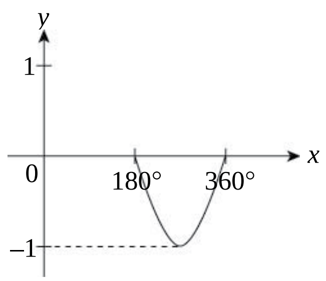
A



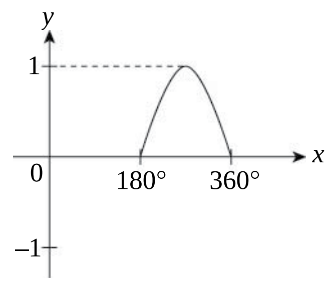
C



B



D



Solution

cos 180° = –1 and cos 360° = 1 are shown in graph **C**.

Answer: **C**