

Example 117. While playing with his nephew Shashank, Mr. V.S. Malik observes a vertical pole in park. A wire is tied from top of pole to a point on ground level. Mr Malik asks Shashank some Mathematics related questions. Shashank is Class-XI student and very intelligent in Maths. Using some tools, he measures the distance of point at ground where wire is tied from the pole as 10 m and angle between wire and ground level as 75° .



Based on the above information, answer the following questions:

- (i) What is the value of $\tan 75^\circ$?
- (ii) What is the height of pole ?
- (iii) What is the value of $\sin 75^\circ$?
- (iv) What is the length of wire ?
- (v) What is the value of $\sin 105^\circ$?

Example 118. Rohit is a student of class XI. He got an assignment from his tuition teacher. He tried to solve all questions but unable to solve a few of them. If $\cot x = -\frac{5}{12}$ and $\cos y = -\frac{4}{5}$, where x and y both lie in second quadrant.



Based on the above information, answer the following questions:

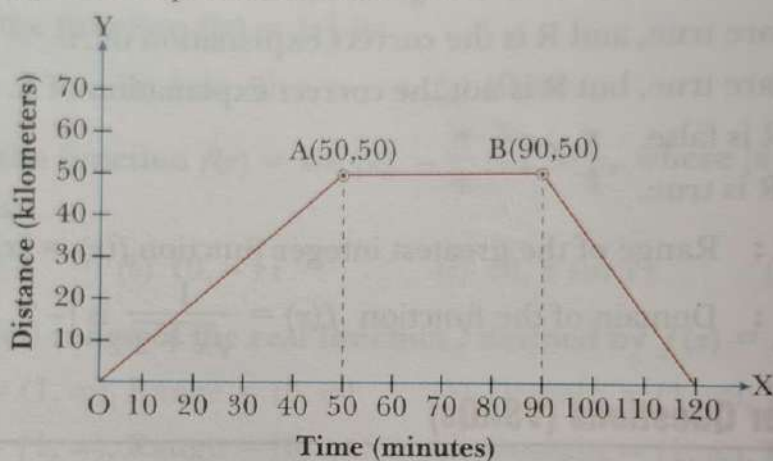
- (i) What is the value of $\cos x$?
- (ii) What is the value of $\sin x$?
- (iii) What is the value of $\sin y$?

OR

- (iii) Find the value of $\sin(x + y)$.

Q 110. This is a graph showing how far the distances have been travelled by Sunita (in her car) in a given time.

She drove, stopped, completed her work and returned back.



Based on above information, answer the following questions:

- (i) Find domain of the function, represented by the graph.
- (ii) Find range of the function, represented by the graph.
- (iii) Find the function, represented by the line AB .

OR

- (iii) How much time did Sunita take to complete her work?

Example 119. $\tan x = \frac{5}{12}$ and x lies in third quadrant.

Based on the above information, answer the following questions:

- (i) Find the value of $\sin 2x$.
- (ii) Find the value of $\cos 2x$.
- (iii) Find the value of $\sin \frac{x}{2}$.

OR

- (iii) Find the value of $\cos \frac{x}{2}$.