

Board – CBSE

Class – 11

Topic – Trigonometric Functions

Very Short Answer Type Questions (1 Mark)

1. Find the radian measure corresponding to $5^{\circ} 37' 30''$
2. Find the degree measure corresponding to $\left(\frac{11}{16}\right)^c$
3. Find the length of an arc of a circle of radius 5 cm subtending a central angle measuring 15°
4. Find the value of $\tan \frac{19\pi}{3}$
5. Find the value of $\sin (-1125^{\circ})$
6. Find the value of $\tan 15^{\circ}$
7. If $\sin A = \frac{3}{5}$ and $\frac{\pi}{2} < A < \pi$, find $\cos A$
8. If $\tan A = \frac{a}{a+1}$ and $\tan B = \frac{1}{2a+1}$ then find the value of $A + B$.
9. Express $\sin 12\theta + \sin 4\theta$ as the product of sines and cosines.
10. Express $2 \cos 4x \sin 2x$ as an algebraic sum of sines or cosines.
11. Write the range of $\cos\theta$
12. What is domain of $\sec\theta$?
13. Find the principal solutions of $\cot x = -\sqrt{3}$
14. Write the general solution of $\cos\theta = 0$
15. If $\sin x = \frac{\sqrt{5}}{3}$ and $0 < x < \frac{\pi}{2}$ find the value of $\cos 2x$
16. If $\cos x = \frac{-1}{3}$ and x lies in quadrant III, find the value of $\sin \frac{\pi}{2}$

Short Answer Type Questions (4 Marks)

17. A horse is tied to a post by a rope. If the horse moves along a circular path, always keeping the rope tight and describes 88 meters when it traces 72° at the center, find the length of the rope.
18. If the angles of a triangle are in the ratio 3:4:5, find the smallest angle in degrees and the greatest angle in radians.
19. If $\cot \alpha = \frac{1}{2}$, $\sec \beta = \frac{-5}{3}$ where $\pi < \alpha < \beta < \pi$, find the value of $\tan (\alpha + \beta)$
20. Find the general solution of the following equations $\cos \left(x + \frac{\pi}{10}\right) = 0$
21. $\sin 7x = \sin 3x$
22. $\sqrt{3} \cos x - \sin x = 1$

23. $3 \tan x + \cot x = 5 \operatorname{cosec} x$

Long Answer Type Questions (6 Marks)

24. Find the general solution of $\sin 2x + \sin 4x + \sin 6x = 0$

25. Find the general solution of

$$\cos \cos 2\theta \cos 3\theta = \frac{1}{4}$$

Answer

1. $\left(\frac{\pi}{32}\right)^c$

2. $39^\circ 22' 30''$

3. $\frac{5\pi}{12} \text{ cm}$

4. $\sqrt{3}$

5. $\frac{-1}{\sqrt{2}}$

6. $2 - \sqrt{3}$

7. $\frac{-4}{5}$

8. 45°

9. $2 \sin 8\theta \cos 4\theta$

10. $\sin 6x - \sin 2x$

11. $[-1, 1]$

12. $\mathbb{R} - \left\{ (2n - 1) \frac{\pi}{2}; n \in \mathbb{Z} \right\}$

13. $\frac{5\pi}{6}, \frac{11\pi}{6}$

14. $(2n - 1) \frac{\pi}{2}; n \in \mathbb{Z}$

15. $-\frac{1}{9}$

16. $\frac{\sqrt{6}}{3}$

17. 70m

18. $45^\circ, \frac{5\pi}{5}, n \in \mathbb{Z}$

19. $\frac{2}{11}$

20. 0

21. $(2n + 1)\frac{\pi}{10}, \frac{n\pi}{2}, n \in \mathbb{Z}$

22. $2n\pi \pm \frac{\pi}{3} \pm \frac{\pi}{6}, n \in \mathbb{Z}$

23. $2n\pi \pm \frac{\pi}{3}, n \in \mathbb{Z}$

24. $\frac{n\pi}{4}, n\pi \pm \frac{\pi}{3}, n \in \mathbb{Z}$

25. $(2n + 1)\frac{\pi}{8}, n\pi \pm \frac{\pi}{3}, n \in \mathbb{Z}$