BHARATIYA VIDYA BHAVAN'S V M PUBLIC SCHOOL, VADODARA

QUESTION BANK

CLASS X MATHEMATICS PRACTICE PAPER TOPIC

TRIGONOMETRY

1. Evaluate: $\sin 31^\circ \sec 59^\circ + \left(\frac{\tan 67^\circ}{\cot 23^\circ}\right)^2 + \sin^2 35^\circ - \cos^2 55^\circ$.
2. If tan A + sec A = a, show that $\frac{a^2-1}{a^2+1}$ = sin A
3. Prove that $\frac{\sin\theta}{1-\cos\theta} + \frac{\tan\theta}{1+\cos\theta} = \sec\theta\ cosec\theta + cot\theta$
4. Find the value of cos15° using the formula cos(A-B) = cosAcosB + sinAsinB
5. If cotA + $\frac{1}{Cot\ A}$ =2 , then prove that $Cot^2A + \frac{1}{\text{CotA .Cot A}} = 2$
6. If $\tan\theta = \frac{a}{b}$ Prove that $\frac{Cos\theta + \sin\theta}{Cos\theta - \sin\theta} = \frac{b+a}{b-a}$
7. If x $\sin^3$□ + y $\cos^3$□ = Sin□ Cos□ and x Sin□ =y Cos □ Prove that $x^2+y^2=1$
8. If 7cosec□ - 3Cot□ = 7 Prove that 7cot - 3Cosec□ = ±3
9. If Tan A = $\frac{1}{2}$ and Tan B = $\frac{1}{3}$ by using Tan(A+B) = $\frac{tanA+tanB}{1-tanAtanB}$ 10. Evaluate :

$$\frac{sin15\ cos75 + cos15\ sin75}{tan5\ tan30\ tan35\ tan55 \tan 85}$$

11. If tan (A+B) = √3 and tan (A-B) = $\frac{1}{\sqrt{3}}$;0<A+B ≤90, A>B find A and B
12. Find the value of $\sec 50^o \sin 40^0 + \cos 40^o \text{Cosec} 50^o$
13. If sin□ + Cos□ = √2 Cos(90 - □) determine cot□
14. Solve for □ : $\sin^2\theta = \frac{1}{2}$;$0^0 < \theta_2 < 90$
15. Prove that $(\sqrt{3} + 1)(3-\cot 30^o) = \tan^3 60^o - 2 \sin 60^o$
16. If 1 + $\sin^2$□ = 3 sin□ Cos□ then prove that tan □ = 1 or $\frac{1}{2}$
17. Determine for x : 2 $\text{cosec}^2 30$ + x $\sin^2 60$ - $\frac{3}{4}$ $\tan^2 30$= 10
18. Prove that $\frac{\sqrt{1+sin\square}}{\sqrt{1-sin\square}} + \frac{\sqrt{1-sin\square}}{\sqrt{1+sin\square}} = 2\sec\square$
19. Evaluate:-

$$(\cos^2 25^\circ + \cos^2 65^\circ) + \text{cosec}\ \theta\ \sec(90^\circ - \theta) - \cot\theta.\ \tan(90^\circ - \theta)$$

20. If Cos A = $\frac{12}{13}$, find the value of all other trigonometric ratios.

21. Prove that $\sqrt{\frac{1-\sin\theta}{1+\sin\theta}} = \sec\theta - \tan\theta$

22. Prove that :- $\sin\theta(1 + \tan\theta) + \cos\theta(1 + \cot\theta) = \sec\theta + \operatorname{cosec}\theta$.

23. Evaluate:-

$$(\sin^2 25° + \sin^2 65°) + \sqrt{3}(\tan 5° \tan 15° \tan 30° \tan 75° \tan 55°)$$

24. Prove that $\frac{1}{1+\sin\theta} + \frac{1}{1-\sin\theta} = 2\sec^2\theta$

25. Prove that :-

(Cosec A – sin A) (sec A – cos A) = $\frac{1}{\tan A + \cot A}$

26. If $\sin\square = \frac{3}{5}$ Find the value of $(\tan\square = \sec\square)^2$

27. If $7\sin^2\theta + 3\cos^2\theta = 4$, show that $\tan\theta = \frac{1}{\sqrt{3}}$

28. Find the value of tan 60° geometrically.

29. Prove : $\frac{secA+tanA-1}{tanA-secA+1} = \frac{1+sinA}{cosA}$.

30. Prove that: $\frac{1+\cos A}{\sin A} + \frac{\sin A}{1+\cos A} = 2cosec\ A$

31. Prove that: $\frac{1+\sin A}{1-\sin A} = (\sec A + \tan A)^2$

32. If A, B, C are interior angles of ΔABC, then show that: $\cos\left(\frac{B+C}{2}\right) = \sin\frac{A}{2}$.

33. Evaluate: $\frac{\sin 39°}{\cos 51°} + 2\tan 11° \tan 31° \tan 45° \tan 59° \tan 79° - 3(sin^2 21° + sin^2 69°)$

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34.If tan(A+B) = 1 and sin(2A-B) = 1 find A and B

35.If Cosec$\square$-Sin$\square$ = m and Sec$\square$-Cos$\square$ = n prove that $(m^2n)^{2/3} + (mn^2)^{2/3} = 1$

36.If a $\cos^3\square$ + 3a cos$\square$ $\sin^2\square$ = m a $\sin^3\square$ + 3a $\cos^2\square$ Sin$\square$ = n prove that $(m+n)^{2/3} + (m-n)^{2/3} = 2a^{2/3}$

37.If 2cos$\square$ - Sin$\square$ = x and Cos$\square$-3sin$\square$= y prove that $2x^2 + y^2 - 2xy = 5$.

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