CLASS X Math - Previous Year Question

Trigonometry

Q1. If $\cot\theta = \frac{1}{\sqrt{3}}$, the value of $sec^2\theta + cosec^2\,\theta$ is **[2021]**

(a) 1 (b) $\frac{40}{9}$ (c) $\frac{38}{9}$ (d) $5\frac{1}{3}$

Q2. In ΔABC right angled at B, $\sin A = \frac{7}{25}$, then the value of $\cos C$ is **[2021]**

(a) $\frac{7}{25}$ (b) $\frac{24}{25}$ (c) $\frac{7}{24}$ (d) $\frac{24}{7}$

Q3. Given that $\sec\theta = \sqrt{2}$, the value of $\frac{1+\tan\theta}{\sin\theta}$ is **[2021]**

(a) $2\sqrt{2}$ (b) $\sqrt{2}$ (c) $3\sqrt{2}$ (d) 2

Q4. If θ is an acute angle and $\tan\theta + \cot\theta = 2$, then the value of $sin^3\theta + cos^3\theta$ is **[2021]**

(a) 1 (b) $\frac{1}{2}$ (c) $\frac{\sqrt{2}}{2}$ (d) $\sqrt{2}$

Q5. If $a\cot\theta + b\,cosec\,\theta = p$ and $b\cot\theta + a\,cosec\,\theta = q$, then $p^2 - q^2 =$ **[2021]**

(a) $a^2 - b^2$ (b) $b^2 - a^2$ (c) $a^2 + b^2$ (d) $b - a$

Q6. The value of $(1 + tan^2\theta)(1 - \sin\theta)(1 + \sin\theta) =$ **[2020]**

Q7. If $\sec\theta + \tan\theta = p$, then $\tan\theta$ is **[2021]**

(a) $\frac{p^2+1}{2p}$ (b) $\frac{p^2-1}{2p}$ (c) $\frac{p^2-1}{p^2+1}$ (d) $\frac{p^2+1}{p^2-1}$

Q8. If A and B are acute angles such that $\sin(A - B) = 0$ and $2\cos(A + B) - 1 = 0$, then find angles A and B. **[2023]**

Q9. $\sec\theta$ when expressed in terms of $\cot\theta$, is equal to: **[2023]**

(a) $\frac{1+cot^2\theta}{\cot\theta}$ (b) $\sqrt{1 + cot^2\theta}$ (c) $\frac{\sqrt{1+cot^2\theta}}{\cot\theta}$ (d) $\frac{\sqrt{1-cot^2\theta}}{\cot\theta}$

Q10. If $\tan\alpha = \sqrt{3}$ and $\tan\beta = \frac{1}{\sqrt{3}}, 0 < \alpha, \beta < 90°$ then find the value of $\cot(\alpha + \beta)$. **[2017]**

Q11. Prove that: $\sec A\ (1 - \sin A)(\sec A + \tan A) = 1$ **[2023]**

Q12. Prove that

$(1 + \cot A - \operatorname{cosec} A)(1 + \tan A + \sec A\ ) = 2$ **[2019]**

Q13. If $\sin\theta - \cos\theta = 0$, then find the value of $sin^4\theta + cos^4\theta$. **[2017]**

Q14. Prove that: $\frac{\tan\theta + \sec\theta - 1}{\tan\theta - \sec\theta + 1} = \frac{1 + \sin\theta}{\cos\theta}$ **[2017]**

Q15. Find the value of $\cos 60°$ geometrically. Hence find $\operatorname{cosec} 60°$. **[2017]**

Q16. If $4\tan\theta = 3$, evaluate $\left(\frac{4\sin\theta - \cos\theta + 1}{4\sin\theta + \cos\theta - 1}\right)$ **[2018]**

Q17. Prove that: $\frac{Sin\ A - 2\ sin^3\ A}{2\ cos^3 A - Cos\ A} = \tan A$ **[2018]**

Q18. Prove that

$(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 = 7 + \tan^2\theta + \cot^2\theta$. **[2019]**

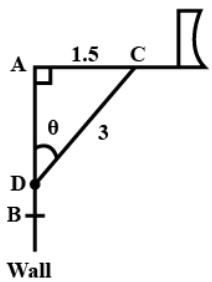
Q19. Prove that $\frac{\sin A - \cos A + 1}{\sin A + \cos A - 1} = \frac{1}{\sec A - \tan A}$ **[2019]**

Q20. Prove that $\frac{tan^2\ A}{tan^2\ A - 1} + \frac{cosec^2 A}{sec^2\ A - cosec^2 A} = \frac{1}{1 - 2\ cos^2 A}$ **[2019]**

Q21. If $\sec\theta = x + \frac{1}{4x}, x \neq 0$, find $(\sec\theta + \tan\theta)$ **[2019]**

Q22. The value of $\left(sin^2\theta + \frac{1}{1 + tan^2\ \theta}\right) =$ **[2020]**

Q23. The rod AC of a TV disc antenna is fixed at right angle to the wall AB and a rod CD is supporting the disc as shown in Fig., If AC = 1.5 m long and CD = 3 m, find (i) $\tan\theta$ (ii) $\sec\theta + cosec\ \theta$. **[2020]**



Q24. If $\sin\theta + \cos\theta = \sqrt{3}$, then prove that $\tan\theta + \cot\theta = 1$ **[2020]**

Q25. Prove that: $2(sin^6\theta + cos^6\theta) - 3(sin^4\theta + cos^4\theta) + 1 = 0$ **[2020]**

Q26. Evaluate: $\frac{5\,cos^2 60° + 4sec^2 30° - tan^2 45°}{sin^2 30° + cos^2 30°}$ **[2023]**

Q27. Prove that: $\frac{\sin A - 2\,sin^3 A}{2\,cos^3 A - \cos A} = \tan A$ **[2023]**

Q28. If $\frac{x}{a}\cos\theta + \frac{y}{b}\sin\theta = 1$ and $\frac{x}{a}\sin\theta - \frac{y}{b}\cos\theta = 1$, prove that $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 2$ **[2017]**

Q29. If $\sin\theta = \frac{1}{3}$, then $\sec\theta$ is equal to: **[2024]**

(a) $\frac{2\sqrt{2}}{3}$ (b) $\frac{3}{2\sqrt{2}}$ (c) 3 (d) $\frac{1}{\sqrt{3}}$

Q30. For what value of θ, $sin^2\theta + \sin\theta + cos^2\theta$ is equal to 2? **[2024]**

(a) 45° (b) 0° (c) 90° (d) 30°

Q31. Evaluate: sin A cos B + cos A sin B, if A = 30° and B = 45°. **[2024]**

Q32. Prove that $(\cot\theta - cosec\,\theta)^2 = \frac{1-\cos\theta}{1+\cos\theta}$. **[2024]**