

CLASS XI GUESS PAPER MATHS

[Trigonometry]

Time: - 1 ½ hr (Class-
XI) **F.M-50**
(Answer **ALL** questions)

1- a) : Prove that : $\cos^2 45^\circ - \sin^2 15^\circ = \frac{\sqrt{3}}{4}$

b) : Find the maximum and minimum value of

(i)(SinA.CosA). (ii)(5Sinx + 12Cosx + 5).

c) : Write True or False, $\frac{\cos 15^\circ + \sin 15^\circ}{\cos 15^\circ - \sin 15^\circ} = \frac{1}{\sqrt{3}}$

d) : If the period of (Tanx) is π , then what will be the period of $\tan\left(\frac{x}{2}\right)$

(e) : The number of solutions of $2\sin\theta - 1 = 0$ is _____. (one, two, infinite)

(f) : If $\cos\alpha = \cos\beta$, then $(\alpha + \beta) =$ _____. (0, π , 2π)

(g) : If $\tan\theta = \tan\alpha$ and $90^\circ < \alpha < 180^\circ$, then θ can be in _____ quadrant.

(h) : If $\tan x \cdot \tan 2x \cdot \tan 7x = \tan x + \tan 2x + \tan 7x$, then $x =$ _____. $\left(\frac{\pi}{4}, \frac{\pi}{5}, \frac{\pi}{10}\right)$

(i) : The number of values of x for which $\cos^2 x = 1$ and $x^2 \leq 4$ is _____. (1, 2, 3, 4)

(j) : For what value of θ , $(\sin 3\theta + \cos 3\theta)$ is maximum?

(2) : P.T : $\left(\frac{\cos A + \cos B}{\sin A - \sin B}\right)^n + \left(\frac{\sin A + \sin B}{\cos A - \cos B}\right)^n = \begin{cases} 2\cot^n\left(\frac{A-B}{2}\right), & \text{if } n \text{ is even} \\ 0, & \text{if } n \text{ is odd} \end{cases}$

(3) : $\cot\left(7\frac{1}{2}\right)^\circ = \sqrt{6} + \sqrt{4} + \sqrt{3} + \sqrt{2}$

(4) : If $(1-e)\tan^2\left(\frac{\beta}{2}\right) = (1+e)\tan^2\left(\frac{\alpha}{2}\right)$, then prove that : $\cos\beta = \frac{\cos\alpha - e}{1 - e\cos\alpha}$

(5) : If $A + B + C = \pi$, then prove that :

$$\sin^2\left(\frac{A}{2}\right) + \sin^2\left(\frac{B}{2}\right) + \sin^2\left(\frac{C}{2}\right) = 1 - 2\sin\left(\frac{A}{2}\right)\sin\left(\frac{B}{2}\right)\sin\left(\frac{C}{2}\right).$$

(6) : Prove that : $\cos\left(\frac{\pi}{16}\right) = \frac{1}{2}\sqrt{2 + \sqrt{2 + \sqrt{2}}}$



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Ranjan Ku Mohapatra
mahapatra.ranjan@rediffmail.com
+91-9437534728