SUMMER ASSIGNMENT

CLASS – XII SUBJECT: MATHEMATICS (041)

Q.1 Solve for x : $2\ \tan^{-1} x + \sin^{-1}\left(\frac{2x}{1+x^2}\right) = 4\sqrt{3}$

Q.2 Find the domain of $f(x) = \sin^{-1}(-x^2)$

Q.3 Find the value of : $\tan^{-1}(\frac{-1}{\sqrt{3}}) + \cot^{-1}\left(\frac{1}{\sqrt{3}}\right) + \tan^{-1}\left[\sin\left(\frac{-\pi}{2}\right)\right]$

Q.4 Simplify : $\cos^{-1} x + \cos^{-1}\left[\frac{x}{2} + \frac{\sqrt{3-3x^2}}{2}\right]; \frac{1}{2} \leq x \leq 1$

Q.5 Draw the graph of the following function : $y = 2\sin^{-1} x\,, -\pi \leq y \leq \pi$

Q.6 If $f(x) = |\tan 2x|$, then find the value of $f'(x) at\ x = \frac{\pi}{3}$

Q.7 If $y = \ \csc(\cot^{-1} x)$, then prove that $\sqrt{1+x^2}\frac{dy}{dx} - x = 0$

Q.8 If $y = cos^3(sec^2 2t)$ find $\frac{dy}{dt}$

Q.9 If $\ y = \left(x + \sqrt{x^2-1}\right)^2$, then show that : $(x^2-1)\left(\frac{dy}{dx}\right)^2 = 4y^2$

Q.10 If $(x^2+y^2)^2 = xy$ then find $\frac{dy}{dx}$.

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