SAINIK SCHOOL GOPALGANJ

SUB: MATHEMATICS

CLASS-XII

ASSIGNMENT

Chapter 2: Inverse Trigonometric Functions

(Q1 to 10) There are four Options against each question. Choose the option which you consider the most appropriate as your answer.

1. $\sin^{-1}[2x\sqrt{(1-x^2)}] =$

    (a) $\frac{1}{2}\sin^{-1}x$ **(b)** $2\sin^{-1}x$ (c) $\sin^{-1}x$ (d) none

2. $\tan^{-1}\frac{\sqrt{a-x}}{\sqrt{a+x}} =$

    (a) $\frac{1}{2}\cos^{-1}\frac{x}{a}$ (b) $\frac{1}{2}\cot^{-1}\frac{x}{a}$ (c) $\cos^{-1}\frac{x}{a}$ (d) $\frac{1}{2}\sin^{-1}\frac{x}{a}$

3. If $\tan^{-1}x + \tan^{-1}\frac{1}{7} = \frac{\pi}{4}$, then $x =$

    (a) $\frac{7}{6}$ (b) $\frac{4}{3}$ (c) $\frac{3}{4}$ (d) $\frac{6}{7}$

4. $\sec^{-1}(\sec\frac{\pi}{3}) =$

    (a) $\frac{2\pi}{3}$ **(b)** $\frac{\pi}{3}$ (c) π (d) none

5. The value of $\sin(2\cos^{-1}(-\frac{3}{5}))$ is

    (a) None of these   **(b)** $-\frac{24}{25}$ (c) $\frac{7}{25}$ (d) $\frac{24}{25}$

6. What is the value of expression $[\cot^{-1}\{\cos(\tan^{-1}1)\}]$?

    (a) $\frac{\sqrt{2}}{\sqrt{3}}$ (b) $\frac{1}{\sqrt{3}}$ (c) 1   (d) none

7. If $4\cos^{-1}x + \sin^{-1}x = \pi$ then x =

    (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$ **(c)** $\frac{\sqrt{3}}{2}$ (d) 0

8. If $\tan^{-1}3 + \tan^{-1}x = \tan^{-1}8$, then $x =$

    (a) $\frac{7}{9}$ (b) $\frac{4}{3}$ (c) $\frac{3}{4}$ (d) $\frac{1}{5}$

9. If $\sin^{-1}x - \cos^{-1}x = \frac{\pi}{6}$, then x =

    (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$ **(c)** $\frac{\sqrt{3}}{2}$ (d) 0

10. In $\triangle ABC$, if C is right angle, then $\tan^{-1}\frac{a}{(b+c)} + \tan^{-1}\frac{b}{(c+a)} =$

(a) $\frac{2\pi}{3}$ (b) $\frac{\pi}{3}$ (c) π **(d)** $\frac{\pi}{4}$

11.   Evaluate $\tan^{-1}\left(\tan\frac{6\pi}{7}\right)$

12.   Show that $\sin^{-1}x + \cos^{-1}x = \frac{\pi}{2}$

13   Prove that $\tan^{-1}\frac{1}{13} + \tan^{-1}\frac{1}{7} = \tan^{-1}\frac{2}{9}$

14.   If $\tan^{-1}2x + \tan^{-1}3x = \frac{\pi}{4}$ then find x .

15   Solve $\sin^{-1}\frac{x}{2} + \cos^{-1}x = \frac{\pi}{6}$

16.   Using the principal values, write the value of $\cos^{-1}\left(\frac{1}{2}\right) + 2\,sin^{-1}\left(\frac{1}{2}\right)$.

17.   Show that $\tan^{-1}\frac{\sqrt{1+x}-\sqrt{1-x}}{\sqrt{1+x}+\sqrt{1-x}} = \frac{\pi}{4} - \frac{1}{2}\cos^{-1}x$, $\frac{1}{\sqrt{2}} \le x \le 1$

18.   Show that $\sin^{-1}\frac{12}{13} + \cos^{-1}\left(\frac{4}{5}\right) + \tan^{-1}\frac{63}{16} = \pi$

19.   Show that $\sin^{-1}\frac{3}{5} - \sin^{-1}\frac{8}{17} = \cos^{-1}\frac{84}{85}$

20.   Draw the graphs of all inverse trigonometric Functions.