DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth **SUBJECT : MATHS**
DATE : **DPP NO. : 8**

Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

1. If a, b, c be positive real number and the value of

$$\theta = \tan^{-1}\sqrt{\frac{a(a+b+c)}{bc}} + \tan^{-1}\sqrt{\frac{b(a+b+c)}{ca}} + \tan^{-1}\sqrt{\frac{c(c+b+c)}{ab}}$$

Then $\tan\theta$ is equal to

a) 0 b) 1 c) $\frac{a+b+c}{abc}$ d) None of these

2. If $\sin^{-1}x + \sin^{-1}y = \frac{\pi}{2}$, then $\cos^{-1}x + \cos^{-1}y$ is equal to

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

3. $\tan^{-1}\frac{c_1x-y}{c_1y+x} + \tan^{-1}\frac{c_2-c_1}{1+c_2c_1} + \tan^{-1}\frac{c_3-c_2}{1+c_3c_2} + \ldots + \tan^{-1}\frac{1}{c_n}$ is equal to

a) $\tan^{-1}\frac{y}{x}$ b) $\tan^{-1}yx$ c) $\tan^{-1}\frac{x}{y}$ d) $\tan^{-1}(x-y)$

4. The value of $\cos\{\tan^{-1}(\tan 2)\}$, is

a) $\frac{1}{\sqrt{5}}$ b) $-\frac{1}{\sqrt{5}}$ c) $\cos 2$ d) $-\cos 2$

5. If $\tan^{-1}\frac{x-1}{x+2} + \tan^{-1}\frac{x+1}{x+2} = \frac{\pi}{4}$, then x is equal to

a) $\frac{1}{\sqrt{2}}$ b) $-\frac{1}{\sqrt{2}}$ c) $\pm\sqrt{\frac{5}{2}}$ d) $\pm\frac{1}{2}$

6. The sum of series

$$\tan^{-1}\frac{1}{1+1+1^2} + \tan^{-1}\frac{1}{1+2+2^2} + \tan^{-1}\frac{1}{1+3+3^2} + \ldots$$

$\infty$is equal to

a) $\frac{\pi}{4}$ b) $\frac{\pi}{2}$ c) $\frac{\pi}{3}$ d) $\frac{\pi}{6}$

7. The value of $'a'$for which $ax^2 + \sin^{-1}(x^2-2x+2) + \cos^{-1}(x^2-2x+2) = 0$ has a real solution, is

a) $-\frac{2}{\pi}$ b) $\frac{2}{\pi}$ c) $-\frac{\pi}{2}$ d) $\frac{\pi}{2}$

8. If $\tan^{-1}x - \tan^{-1}y = \tan^{-1}A$,then A is equal to

a) $x-y$ b) $x+y$ c) $\frac{x-y}{1+xy}$ d) $\frac{x+y}{1-xy}$

9. If $\tan^{-1}\left(\frac{a}{x}\right)+\tan^{-1}\left(\frac{b}{x}\right)=\frac{\pi}{2}$,then x is equal to

a) $\sqrt{ab}$ b) $\sqrt{2ab}$ c) $2ab$ d) ab

10. $\cos^{-1}\frac{1}{2}+2\sin^{-1}\frac{1}{2}$ is equal to

a) $\frac{\pi}{4}$ b) $\frac{\pi}{6}$ c) $\frac{\pi}{3}$ d) $\frac{2\pi}{3}$

11. $4\tan^{-1}\frac{1}{5}-\tan^{-1}\frac{1}{239}$ is equal to

a) π b) $\pi/2$ c) $\pi/3$ d) $\pi/4$

12. If $2\sin^{-1}x=\sin^{-1}\left(2x\sqrt{1-x^2}\right)$, then x is equal to

a) $[-1,1]$ b) $\left[-\frac{1}{\sqrt{2}},1\right]$ c) $\left[-\frac{1}{\sqrt{2}},\frac{1}{\sqrt{2}}\right]$ d) None of these

13. The value of $\cot\left(\text{cosec}^{-1}\frac{5}{3}+\tan^{-1}\frac{2}{3}\right)$, is

a) $\frac{4}{17}$ b) $\frac{5}{17}$ c) $\frac{6}{17}$ d) $\frac{3}{17}$

14. Two angles of a triangle are $\cot^{-1}2$and $\cot^{-1}3$. Then , the third angle is

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

15. If $e^{[\sin^2\alpha+\sin^4\alpha+\sin^6\alpha+\ldots\infty]\log_e 2}$ is a root of equation $x^2-9x+8=0$,where $0<\alpha<\frac{\pi}{2}$, then the principle value of $\sin^{-1}\sin\left(\frac{2\pi}{3}\right)$ is

a) α b) 2α c) $-\alpha$ d) -2α

16. If $\frac{1}{2}\le x\le 1$, then $\cos^{-1}(4x^3-3x)$equals

a) $3\cos^{-1}x$ b) $2\pi-3\cos^{-1}x$ c) $-2\pi-3\cos^{-1}x$ d) None of these

17. If $\sin^{-1}\left(2x\sqrt{1-x^2}\right)-2\sin^{-1}x=0$, then x belongs to the interval

a) $[-1,1]$ b) $[-1/\sqrt{2},1/\sqrt{2}]$ c) $[-1,-1/\sqrt{2}]$ d) $[1/\sqrt{2},1]$

18. Solution set of $[\sin^{-1}x]>[\cos^{-1}x]$,white [.]denote the greatest integer function , is

a) $\left[\frac{1}{\sqrt{2}},1\right]$ b) $(\cos 1,\sin 1)$ c) $[\sin 1,1]$ d) None of these

19. If $[\sin^{-1}\cos^{-1}\sin^{-1}x]=1$, where [.] denotes the greatest integer function, then x belongs to the interval

a) [tan sin cos 1, tan sin cos sin 1] b) (tan sin cos 1, tan sincos sin 1)

c) $[-1,1]$ d) [sin cos tan 1, sin cos sin tan 1]

20. The solution of $\tan^{-1}x+2\cot^{-1}x=\frac{2\pi}{3}$ is

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