DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth **SUBJECT : MATHS**
DATE : **DPP NO. : 7**

Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

1. If $a_1, a_2, a_3, \ldots, a_n$ are in AP with common ratio d, then $\tan\left[\tan^{-1}\frac{d}{1+a\_1a_2}+\tan^{-1}\frac{d}{1+a_2a_3}+\ldots+\tan^{-1}\frac{4}{1+a_{n-1}a_n}\right]$ is equal to

a) $\frac{(n-1)d}{a_1+a_n}$ b) $\frac{(n-1)d}{1+a_1a_n}$ c) $\frac{nd}{1+a_1a_n}$ d) $\frac{a_n-a_1}{a_n+a_1}$

2. $\sin\left(2\sin^{-1}\sqrt{\frac{63}{65}}\right)$ is equal to

a) $\frac{2\sqrt{126}}{65}$ b) $\frac{4\sqrt{65}}{65}$ c) $\frac{8\sqrt{63}}{65}$ d) $\frac{\sqrt{63}}{65}$

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

a) $\frac{1}{2}$ b) $\frac{\sqrt{3}}{2}$ c) $-\frac{1}{2}$ d) None of these

4. If $\sin^{-1}\left(\frac{2x}{1+x^2}\right)+\cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)=4\tan^{-1}x$, then

a) $x\in-(-\infty,-1)$ b) $x\in(1,\infty)$ c) $x\in[0,1]$ d) $x\in[-1,0]$

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

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

6. If $\tan^{-1}a+\tan^{-1}b=\sin^{-1}1-\tan^{-1}c$, then

a) $a+b+c=abc$

b) $ab+bc+ca=abc$

c) $\frac{1}{a}+\frac{1}{b}+\frac{1}{c}-\frac{1}{abc}=0$

d) $ab+bc+ca=a+b+c$

7. The value of $\cos[\tan^{-1}\{\sin(\cot^{-1}x)\}]$ is

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

8. If $[\cot^{-1}x]+[\cos^{-1}x]=0$, where x is a non-negative real number and [.] denotes the greatest integer function, then complete set of values of x is

a) $(\cos 1,1]$ b) $(\cot 1,1)$ c) $(\cos 1,\cot 1)$ d) None of these

9. If $\cos^{-1}x + \cos^{-1}y + \cos^{-1}z = 3\pi$, then $xy + yz + zx$ is equal to

a) 1 b) 0 c) -3 d) 3

10. A solution of the equation $\tan^{-1}(1+x) + \tan^{-1}(1-x) = \frac{\pi}{2}$, is

a) $x = 1$ b) $x = -1$ c) $x = 0$ d) $x = \pi$

11. $\tan\left(\frac{\pi}{4} + \frac{1}{2}\cos^{-1}x\right) + \tan\left(\frac{\pi}{4} - \frac{1}{2}\cos^{-1}x\right), x \neq 0$ is equal to

a) x b) $2x$ c) $\frac{2}{x}$ d) None of these

12. The equation $2\cos^{-1}x + \sin^{-1}x = \frac{11\pi}{6}$ has

a) No solution b) Only one solution c) Two solutions d) Three solutions

13. If $\sin^{-1}x + \sin^{-1}y + \sin^{-1}z = \frac{3\pi}{2}$, then the value of $x^{100} + y^{100} + z^{100} - \frac{9}{x^{101} + y^{101} + z^{101}}$, is

a) 0 b) 1 c) 2 d) 3

14. If $\sin\left(\sin^{-1}\frac{1}{5} + \cos^{-1}x\right) = 1$, then x is equal to

a) 1 b) 0 c) 4/5 d) 1/5

15. If the mapping $f(x) = ax + b, a > 0$ maps $[-1,1]$ onto $[0, 2]$ then $\cot[\cot^{-1}7 + \cot^{-1}8 + \cot^{-1}18]$ is equal to

a) $f(-1)$ b) $f(0)$ c) $f(1)$ d) $f(2)$

16. If $\sin^{-1}\frac{2a}{1+a^2} - \cos^{-1}\frac{1-b^2}{1+b^2} = \tan^{-1}\frac{2x}{1-x^2}$, then value of x is

a) a b) b c) $\frac{a+b}{1-ab}$ d) $\frac{a-b}{1+ab}$

17. The sum of the two angles $\cot^{-1}3$ and $\text{cosec}^{-1}\sqrt{5}$, is

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

18. $\tan\left[\frac{1}{2}\sin^{-1}\left(\frac{2a}{1+a^2}\right) + \frac{1}{2}\cos^{-1}\left(\frac{1-a^2}{1+a^2}\right)\right]$ is equal to

a) $\frac{2a}{1+a^2}$ b) $\frac{1-a^2}{1+a^2}$ c) $\frac{2a}{1-a^2}$ d) None of these

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

a) $x + y + xy = 1$ b) $x + y - xy = 1$

c) $x + y + xy + 1 = 0$ d) $x + y - xy + 1 = 0$

20. If $0 \leq x \leq 1$, then $\cos^{-1}(2x^2 - 1)$ equals

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