DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth **SUBJECT : MATHS**
DATE : **DPP NO. : 1**

Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

1. $\sin^{-1}\left(\frac{3}{5}\right)+\tan^{-1}\left(\frac{1}{7}\right)=$
   a) $\frac{\pi}{4}$ b) $\frac{\pi}{2}$ c) $\cos^{-1}\left(\frac{4}{5}\right)$ d) π

2. If $xy+yz+zx=1$, then $\tan^{-1}x+\tan^{-1}y+\tan^{-1}z=$
   a) π b) $\pi/2$ c) 1 d) none of these

3. If $x^2+y^2+z^2=r^2$, then
$\tan^{-1}\left(\frac{xy}{zr}\right)+\tan^{-1}\left(\frac{yz}{xr}\right)+\tan^{-1}\left(\frac{xz}{yr}\right)$ is equal to
   a) π b) $\frac{\pi}{2}$ c) 0 d) None of these

4. If $f(x)=\sin^{-1}\left\{\frac{\sqrt{3}}{2}x-\frac{1}{2}\sqrt{1-x^2}\right\}$, $-\frac{1}{2}\le x\le 1$, then $f(x)$ is equal to
   a) $\sin^{-1}\frac{1}{2}-\sin^{-1}x$ b) $\sin^{-1}x-\frac{\pi}{6}$ c) $\sin^{-1}x+\frac{\pi}{6}$ d) None of these

5. $\cos^{-1}\left(\frac{1}{2}\right)+2\sin^{-1}\left(\frac{1}{2}\right)$ is equal to
   a) $\frac{\pi}{6}$ b) $\frac{\pi}{3}$ c) $\frac{2\pi}{3}$ d) $\frac{\pi}{4}$

6. The solution of $\tan^{-1}2\theta+\tan^{-1}3\theta=\frac{\pi}{4}$ is
   a) $\frac{1}{\sqrt{3}}$ b) $\frac{1}{3}$ c) $\frac{1}{6}$ d) $\frac{1}{\sqrt{6}}$

7. The value of $\cos^{-1}\left(-\frac{1}{2}\right)$ among the following, is
   a) $\frac{9\pi}{3}$ b) $\frac{8\pi}{3}$ c) $\frac{5\pi}{3}$ d) $\frac{11\pi}{3}$

8. If $\tan\theta+\tan\left(\frac{\pi}{3}+\theta\right)+\tan\left(-\frac{\pi}{3}+\theta\right)=a\tan 3\theta$, then a is equal to
   a) $1/3$ b) 1 c) 3 d) None of these

9. The value of $\cot^{-1}\frac{3}{4}+\sin^{-1}\frac{5}{13}$ is
   a) $\sin^{-1}\frac{63}{65}$ b) $\sin^{-1}\frac{12}{13}$ c) $\sin^{-1}\frac{65}{68}$ d) $\sin^{-1}\frac{5}{12}$

10. The value of x for which $\cos^{-1}(\cos 4) > 3x^2 - 4x$is

a) $\left(0, \frac{2+\sqrt{6\pi-8}}{3}\right)$ b) $\left(\frac{2-\sqrt{6\pi-8}}{3}, 0\right)$

c) $(-2, 2)$ d) $\left(\frac{2-\sqrt{6\pi-8}}{3}, \frac{2+\sqrt{6\pi-8}}{3}\right)$

11. If $x \in (-\infty, 1)$, then $\tan^{-1}\left(\frac{2x}{1-x^2}\right)$ equals

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

12. If $\frac{1}{\sqrt{2}} \leq x \leq 1$, then $\sin^{-1}\left(2x\sqrt{1-x^2}\right)$ equals

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

13. $\frac{\alpha^3}{2}\text{cosec}^2\left(\frac{1}{2}\tan^{-1}\frac{\alpha}{\beta}\right) + \frac{\beta^3}{2}\sec^2\left(\frac{1}{2}\tan^{-1}\left(\frac{\beta}{\alpha}\right)\right)$is

a) $(\alpha-\beta)(\alpha^2+\beta^2)$ b) $(\alpha+\beta)(\alpha^2-\beta^2)$

c) $(\alpha+\beta)(\alpha^2+\beta^2)$ d) None of these

14. If $\sum_{i=1}^{20} \sin^{-1} x_i = 10\pi$,then $\sum_{i=1}^{20} x_i$ is equal to

a) 20 b) 10 c) 0 d) None of these

15. Which one of the following is correct?

a) $\tan 1 > \tan^{-1} 1$ b) $\tan 1 < \tan^{-1} 1$ c) $\tan 1 = \tan^{-1} 1$ d) None of these

16. If $\alpha = \sin^{-1}\frac{\sqrt{3}}{2} + \sin^{-1}\frac{1}{3}$and $\beta = \cos^{-1}\frac{\sqrt{3}}{2} + \cos^{-1}\frac{1}{3}$, then

a) $\alpha > \beta$ b) $\alpha = \beta$ c) $\alpha < \beta$ d) $\alpha + \beta = 2\pi$

17. $2\tan^{-1}\left(\frac{1}{3}\right) + \tan^{-1}\left(\frac{1}{7}\right)$is equal to

a) $\left(\frac{49}{29}\right)$ b) $\frac{\pi}{2}$ c) $-\left(\frac{49}{29}\right)$ d) $\frac{\pi}{4}$

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. The sum of the infinite series

$$\cot^{-1} 2 + \cot^{-1} 8 + \cot^{-1} 18 + \cot^{-1} 32 + \ldots\text{is}$$

a) π b) $\frac{\pi}{2}$ c) $\frac{\pi}{4}$ d) None of these

20. 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