DPP
DAILY PRACTICE PROBLEMS

**CLASS : XIIth** **SUBJECT : MATHS**
**DATE :** **DPP NO. : 4**

## Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

1. If $\theta = \tan^{-1} a, \phi = \tan^{-1} b$ and $ab = -1$, then $(\theta - \phi)$ is equal to
   a) 0 b) $\frac{\pi}{4}$ c) $\frac{\pi}{2}$ d) None of these

2. If the $(\cos^{-1} x) = \sin\left(\cot^{-1}\frac{1}{2}\right)$, then $x$ is equal to
   a) $\pm\frac{5}{3}$ b) $\pm\frac{\sqrt{5}}{3}$ c) $\pm\frac{5}{\sqrt{3}}$ d) None of these

3. If $\sin^{-1} x + \sin^{-1} y + \sin^{-1} z = \pi$, then $x^4 + y^4 + z^4 + 4x^2y^2z^2 = k(x^2y^2 + y^2z^2 + z^2x^2)$ Where $k$ is equal to
   a) 1 b) 2 c) 4 d) none of these

4. $\tan^{-1}\left(\frac{3x - x^3}{1 - 3x^2}\right) - \tan^{-1}\left(\frac{2x}{1 - x^2}\right)$ is equal to
   a) 0 b) 1 c) $\tan^{-1} x$ d) $\tan^{-1} 2x$

5. If $\cos^{-1}\sqrt{p} + \cos^{-1}\sqrt{1-p} + \cos^{-1}\sqrt{1-q} = \frac{3\pi}{4}$, then the value of $q$ is
   a) 1 b) $\frac{1}{\sqrt{2}}$ c) $\frac{1}{3}$ d) $\frac{1}{2}$

6. If $\alpha, \beta$ are the roots of the equation $6x^2 - 5x + 1 = 0$, then the value of $\tan^{-1}\alpha + \tan^{-1}\beta$ is
   a) 0 b) $\pi/4$ c) 1 d) $\pi/2$

7. If $\alpha = \sin^{-1}\frac{4}{5} + \sin^{-1}\frac{1}{3}$ and $\beta = \cos^{-1}\frac{4}{5} + \cos^{-1}\frac{1}{3}$, then
   a) $\alpha < \beta$ b) $\alpha = \beta$ c) $\alpha > \beta$ d) None of these

8. 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

9. The value of $\tan^{-1} 1 + \tan^{-1} 2 + \tan^{-1} 3$, is
   a) 0 b) 1 c) $\pi$ d) $-\pi$

10. The greatest and the least values of $(\sin^{-1} x)^3 + (\cos^{-1} x)^3$ are respectively
    a) $-\frac{\pi}{2}, \frac{\pi}{2}$ b) $-\frac{\pi^3}{8}, \frac{\pi^3}{8}$ c) $\frac{\pi^3}{32}, \frac{7\pi^3}{8}$ d) None of these

11. If $\tan^{-1}\left(\frac{1}{3}\right) + \tan^{-1}\left(\frac{3}{4}\right) - \tan^{-1}\left(\frac{x}{3}\right) = 0$, then $x$ is equal to

a) $\frac{7}{3}$ b) 3 c) $\frac{11}{3}$ d) $\frac{13}{3}$

12. Cos $[\tan^{-1}\{\sin(\cot^{-1} x)\}]$ is equal to

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

13. $\tan^{-1}\frac{x}{y} - \tan^{-1}\frac{x-y}{x+y}$ is equal to
(where $x < y > 0$)

a) $-\frac{\pi}{4}$ b) $\frac{\pi}{4}$ c) $\frac{3\pi}{4}$ d) None of these

14. If $\tan^{-1} 2$ and $\tan^{-1} 3$ are two angles of a triangle, then the third angle is

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

15. If $\theta$ and $\phi$ are the roots of the equation $8x^2 + 22x + 5 = 0$, then

a) Both $\sin^{-1}\theta$ and $\sin^{-1}\phi$ are equal b) Both $\sec^{-1}\theta$ and $\sec^{-1}\phi$ are equal
c) Both $\tan^{-1}\theta$ and $\tan^{-1}\phi$ are equal d) None of the above

16. If $x_1, x_2, x_3, x_4$ are the roots of the equation $x^4 - x^3 \sin 2\beta - x\cos\beta - \sin\beta = 0$, then $\tan^{-1} + \tan^{-1} x_2 + \tan^{-1} x_3 + \tan^{-1} x_4$ is equal to

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

17. The value of $\cos(2\cos^{-1} x + \sin^{-1} x)$ at $x = \frac{1}{5}$ is

a) 1 b) 3 c) 0 d) $-\frac{2\sqrt{6}}{5}$

18. Solution of the equation $\cot^{-1} x + \sin^{-1}\frac{1}{\sqrt{5}} = \frac{\pi}{4}$ is

a) $x = 3$ b) $x = \frac{1}{\sqrt{5}}$ c) $x = 0$ d) None of these

19. Let $\cos(2\tan^{-1} x) = \frac{1}{2}$, then the value of $x$ is

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

20. If $\sin^{-1}\frac{1}{3} + \sin^{-1}\frac{2}{3} = \sin^{-1} x$, then the value of $x$ is

a) 0 b) $\frac{(\sqrt{5} - 4\sqrt{2})}{9}$ c) $\frac{(\sqrt{5} + 4\sqrt{2})}{9}$ d) $\frac{\pi}{2}$