

## DPP

DAILY PRACTICE PROBLEMS

CLASS : XIIth  
DATE :

SUBJECT : MATHS  
DPP NO. : 2

### Topic :-INVERSE TRIGONOMETRIC FUNCTIONS

- 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  $\tan^{-1} x_1 + \tan^{-1} x_2 + \tan^{-1} x_3 + \tan^{-1} x_4$  is equal to  
 a)  $\beta$                       b)  $\frac{\pi}{2} - \beta$                       c)  $\pi - \beta$                       d)  $-\beta$
- If  $x \in \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$ , then the value of  $\tan^{-1} \left(\frac{\tan x}{4}\right) + \tan^{-1} \left(\frac{3 \sin 2x}{5+3 \cos 2x}\right)$  is  
 a)  $\frac{x}{2}$                       b)  $2x$                       c)  $3x$                       d)  $x$
- $\frac{\alpha^3}{2} \operatorname{cosec}^2 \left(\frac{1}{2} \tan^{-1} \frac{\alpha}{\beta}\right) + \frac{\beta^3}{2} \sec^2 \left(\frac{1}{2} \tan^{-1} \left(\frac{\beta}{\alpha}\right)\right)$  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
- If  $-1 \leq x \leq 0$ , 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)  $-2 \cos^{-1} x$
- If  $\cos^{-1} \frac{3}{5} - \sin^{-1} \frac{4}{5} = \cos^{-1} x$ , then  $x$  is equal to  
 a) 0                      b) 1                      c) -1                      d) None of these
- If  $\sec^{-1} x = \operatorname{cosec}^{-1} y$ , then  $\cos^{-1} \frac{1}{x} + \cos^{-1} \frac{1}{y} =$   
 a)  $\pi$                       b)  $\frac{\pi}{4}$                       c)  $-\frac{\pi}{2}$                       d)  $\frac{\pi}{2}$
- $\sec^2(\tan^{-1} 2) + \operatorname{cosec}^2(\cot^{-1} 3)$  is equal to  
 a) 1                      b) 5                      c) 10                      d) 15
- If  $-1 \leq x \leq -\frac{1}{2}$ , then  $\sin^{-1}(3x - 4x^3)$  equals  
 a)  $3 \sin^{-1} x$                       b)  $\pi - 3 \sin^{-1} x$                       c)  $-\pi - 3 \sin^{-1} x$                       d) None of these
- $\tan \frac{2\pi}{5} - \tan \frac{\pi}{15} - \sqrt{3} \tan \frac{2\pi}{5} \tan \frac{\pi}{15}$  is equal to  
 a)  $-\sqrt{3}$                       b)  $\frac{1}{\sqrt{3}}$                       c) 1                      d)  $\sqrt{3}$
- The value of  $\tan \left\{ \cos^{-1} \left(-\frac{2}{7}\right) - \frac{\pi}{2} \right\}$  is  
 a)  $\frac{2}{3\sqrt{5}}$                       b)  $\frac{2}{3}$                       c)  $\frac{1}{\sqrt{5}}$                       d)  $\frac{4}{\sqrt{5}}$
- The value of



- $\sin\left(\sin^{-1}\frac{1}{3} + \sec^{-1}3\right) + \cos\left(\tan^{-1}\frac{1}{2} + \tan^{-1}2\right)$  is
- a) 1                                      b) 2                                      c) 3                                      d) 4
12. If  $-\frac{1}{\sqrt{3}} < x < \frac{1}{\sqrt{3}}$ , then  $\tan^{-1}\left(\frac{3x-x^3}{1-3x^2}\right)$  equals
- a)  $3 \tan^{-1} x$                                       b)  $-\pi + 3 \tan^{-1} x$                                       c)  $\pi + 3 \tan^{-1} x$                                       d) None of these
13.  $\sin\left(\frac{1}{2} \cos^{-1}\frac{4}{5}\right) =$
- a)  $-\frac{1}{\sqrt{10}}$                                       b)  $\frac{1}{\sqrt{10}}$                                       c)  $-\frac{1}{10}$                                       d)  $\frac{1}{10}$
14. The solution of  $\tan^{-1} 2x + \tan^{-1} 3x = \frac{\pi}{4}$  is
- a)  $\frac{1}{6}$                                       b)  $-1$                                       c)  $\left(\frac{1}{6}, -1\right)$                                       d) None of these
15.  $\sin^{-1}\frac{4}{5} + 2 \tan^{-1}\frac{1}{3}$  is equal to
- a)  $\frac{\pi}{3}$                                       b)  $\frac{\pi}{4}$                                       c)  $\frac{\pi}{2}$                                       d) 0
16. 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
17. The value of  $\cos^{-1}\left(\cos\frac{5\pi}{3}\right) + \sin^{-1}\left(\cos\frac{5\pi}{3}\right)$  is
- a)  $\frac{10\pi}{3}$                                       b) 0                                      c)  $\frac{\pi}{2}$                                       d)  $\frac{5\pi}{3}$
18. The value of  $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right) - \sin^{-1}\left(\frac{1}{2}\right)$  is
- a)  $45^\circ$                                       b)  $90^\circ$                                       c)  $15^\circ$                                       d)  $30^\circ$
19. If  $\sin^{-1} x + \sin^{-1}(1-x) = \cos^{-1} x$ , then  $x$  equals
- a) 1, -1                                      b) 1, 0                                      c)  $0, \frac{1}{2}$                                       d) None of these
20.  $\tan\left(\frac{\pi}{4} + \frac{1}{2} \cos^{-1} x\right) + \tan\left(\frac{\pi}{4} - \frac{1}{2} \cos^{-1} x\right)$ ,  $x \neq 0$  is equal to
- a)  $x$                                       b)  $2x$                                       c)  $\frac{2}{x}$                                       d) None of these