

## Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

1. If  $a < \frac{1}{32}$ , then the number of solutions of  $(\sin^{-1} x)^3 + (\cos^{-1} x)^3 = a \pi^3$ , is  
 a) 0                                      b) 1                                      c) 2                                      d) Infinite
  
2. If  $\sqrt{3} + i = (a + ib)(c + id)$ , then  $\tan^{-1}\left(\frac{b}{a}\right) + \tan^{-1}\left(\frac{d}{c}\right)$  has the value  
 a)  $\frac{\pi}{3} + 2n\pi, n \in I$               b)  $n\pi + \frac{\pi}{6}, n \in I$               c)  $n\pi - \frac{\pi}{3}, n \in I$               d)  $2n\pi - \frac{\pi}{3}, n \in I$
  
3. If  $\tan^{-1} \frac{1-x}{1+x} = \frac{1}{2} \tan^{-1} x$ , then the value of  $x$  is  
 a)  $\frac{1}{2}$                                       b)  $\frac{1}{\sqrt{3}}$                                       c)  $\sqrt{3}$                                       d) 2
  
4. The sum of the infinite series  $\cot^{-1} 2 + \cot^{-1} 8 + \cot^{-1} 18 + \cot^{-1} 32 + \dots$  is  
 a)  $\pi$                                       b)  $\frac{\pi}{2}$                                       c)  $\frac{\pi}{4}$                                       d) None of these
  
5. If  $y = \cos^{-1}(\cos 10)$ , then  $y$  is equal to  
 a) 10                                      b)  $4\pi - 10$                                       c)  $2\pi + 10$                                       d)  $2\pi - 10$
  
6. The principle value of  $\sin^{-1} \tan\left(\frac{-5\pi}{4}\right)$  is  
 a)  $\frac{\pi}{4}$                                       b)  $-\frac{\pi}{4}$                                       c)  $\frac{\pi}{2}$                                       d)  $-\frac{\pi}{2}$
  
7. The value of  $\sum_{r=0}^{\infty} \tan^{-1}\left(\frac{1}{1+r+r^2}\right)$  is equal to  
 a)  $\frac{\pi}{2}$                                       b)  $\frac{3\pi}{4}$                                       c)  $\frac{\pi}{4}$                                       d) None of these
  
8. If  $-1 \leq x \leq -\frac{1}{2}$ , 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
  
9. 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)  $\frac{x+y}{1-xy}$
  
10. If  $2 \tan^{-1}(\cos x) = \tan^{-1}(2 \operatorname{cosec} x)$ , then the value of  $x$  is  
 a)  $\frac{3\pi}{4}$                                       b)  $\frac{\pi}{4}$                                       c)  $\frac{\pi}{3}$                                       d) None of these

11. The number of real solution of  $\tan^{-1}\sqrt{x(x+1)} + \sin^{-1}\sqrt{x^2+x+1} = \frac{\pi}{2}$  is  
 a) 0                                      b) 1                                      c) 2                                      d)  $\infty$
12.  $\cos\left\{\cos^{-1}\left(-\frac{1}{7}\right) + \sin^{-1}\left(-\frac{1}{7}\right)\right\} =$   
 a)  $-\frac{1}{3}$                                       b) 0                                      c)  $\frac{1}{3}$                                       d)  $\frac{4}{9}$
13. The number of triplets  $(x, y, z)$  satisfying  $\sin^{-1}x + \cos^{-1}y + \sin^{-1}z = 2\pi$ , is  
 a) 0                                      b) 2                                      c) 1                                      d) Infinite
14. If  $\sin^{-1}(1-x) - 2\sin^{-1}x = \frac{\pi}{2}$ , then  $x$  equals  
 a)  $0, -\frac{1}{2}$                                       b)  $0, \frac{1}{2}$                                       c) 0                                      d) None of these
15.  $\cos^{-1}\left(\frac{15}{17}\right) + 2\tan^{-1}\left(\frac{1}{5}\right) =$   
 a)  $\frac{\pi}{2}$                                       b)  $\cos^{-1}\left(\frac{171}{221}\right)$                                       c)  $\frac{\pi}{4}$                                       d) None of these
16. If  $x < 0$ , then  $\tan^{-1}\left(\frac{1}{x}\right)$  equals  
 a)  $\cot^{-1}x$                                       b)  $-\cot^{-1}x$                                       c)  $-\pi + \cot^{-1}x$                                       d)  $-\pi - \cot^{-1}x$
17. 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)  $\frac{1}{2}$
18.  $\tan^{-1}\frac{m}{n} - \tan^{-1}\frac{m-n}{m+n}$  is equal to  
 a)  $\tan^{-1}\frac{n}{m}$                                       b)  $\tan^{-1}\frac{m+n}{m-n}$                                       c)  $\frac{\pi}{4}$                                       d)  $\tan^{-1}\left(\frac{1}{2}\right)$
19. The value of  $\sin\left[\frac{\pi}{2} - \sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right]$  is  
 a)  $\frac{\sqrt{3}}{2}$                                       b)  $-\frac{\sqrt{3}}{2}$                                       c)  $\frac{1}{2}$                                       d)  $-\frac{1}{2}$
20. If  $\cos^{-1}x > \sin^{-1}x$ , then  
 a)  $x < 0$                                       b)  $-1 < x < 0$                                       c)  $0 \leq x < \frac{1}{\sqrt{2}}$                                       d)  $-1 \leq x < \frac{1}{\sqrt{2}}$