SESSION : 2025-26

DPP
DAILY PRACTICE PROBLEMS

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

Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

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

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

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

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

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

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

7. The value of $\left(-\frac{1}{2}\right)$ 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 $tan\ tan\ \theta + tan\ tan\ \left(\frac{\pi}{3} + \theta\right) + tan\ tan\ \left(-\frac{\pi}{3} + \theta\right) = a\ tan\ tan\ 3\theta$, then a is equal to
   a) $\frac{1}{3}$ b) 1 c) 3 d) None of these

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

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

a) $2x$ b) $-\pi + 2x$ c) $\pi + 2x$ d) None of these

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

a) $2x$ b) $\pi - 2x$ c) $-\pi - 2x$ d) None of these

13. $\frac{\alpha^3}{2} cosec^2\left(\frac{1}{2}\frac{\alpha}{\beta}\right) + \frac{\beta^3}{2}\left(\frac{1}{2}\left(\frac{\beta}{\alpha}\right)\right)$ 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 $\sum_{i=1}^{20} x_i = 10\pi$, 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) $tan\ tan\ 1 > 1$ b) $tan\ tan\ 1 < 1$ c) $tan\ tan\ 1 = 1$ d) None of these

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

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

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

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

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

$2 + 8 + 18 + 32 + \ldots is$

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

20. If $\left(\frac{a}{x}\right) + \left(\frac{b}{x}\right) = \frac{\pi}{2}$, then x is equal to

a) $\sqrt{ab}$ b) $\sqrt{2ab}$ c) $2ab$ d) ab

SESSION : 2025-26

DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth **SUBJECT : MATHS**
DATE : **DPP NO. :2**

Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

1. If x_1, x_2, x_3, x_4 are the roots of the equation $x^4 - x^3 \, sin \, sin \, 2\beta - x \, cos \, cos \, \beta - sin \, sin \, \beta = 0$, then $+x_2 + x_3 + x_4$ is equal to
   a) β b) $\frac{\pi}{2} - \beta$ c) $\pi - \beta$ d) $-\beta$

2. If $x \in \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$, then the value of $\left(\frac{tan \, tan \, x}{4}\right) + \left(\frac{3 sin \, sin \, 2x}{5 + 3 cos \, cos \, 2x}\right)$ is
   a) $\frac{x}{2}$ b) $2x$ c) $3x$ d) x

3. $\frac{\alpha^3}{2} cosec^2 \left(\frac{1}{2} \frac{\alpha}{\beta}\right) + \frac{\beta^3}{2} \left(\frac{1}{2} \left(\frac{\beta}{\alpha}\right)\right)$ 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

4. If $-1 \leq x \leq 0$, then $(2x^2 - 1)$ equals
   a) $2x$ b) $\pi - 2x$ c) $2\pi - 2x$ d) $-2x$

5. If $\frac{3}{5} - \frac{4}{5} = x$, then x is equal to
   a) 0 b) 1 c) -1 d) None of these

6. If $x = cosec^{-1} y$, then $\frac{1}{x} + \frac{1}{y} =$
   a) π b) $\frac{\pi}{4}$ c) $-\frac{\pi}{2}$ d) $\frac{\pi}{2}$

7. $(2) + cosec^2 (3)$ is equal to
   a) 1 b) 5 c) 10 d) 15

8. If $-1 \leq x \leq -\frac{1}{2}$, then $(3x - 4x^3)$ equals
   a) $3x$ b) $\pi - 3x$ c) $-\pi - 3x$ d) None of these

9. $tan \, tan \, \frac{2\pi}{5} - tan \, tan \, \frac{\pi}{15} - \sqrt{3} \, tan \, tan \, \frac{2\pi}{5} \, tan \, tan \, \frac{\pi}{15}$ is equal to
   a) $-\sqrt{3}$ b) $\frac{1}{\sqrt{3}}$ c) 1 d) $\sqrt{3}$

10. The value of $tan\ tan\left\{\left(-\frac{2}{7}\right)-\frac{\pi}{2}\right\}$ is

a) $\frac{2}{3\sqrt{5}}$ b) $\frac{2}{3}$ c) $\frac{1}{\sqrt{5}}$ d) $\frac{4}{\sqrt{5}}$

11. The value of
$sin\ sin\left(\frac{1}{3}+3\right)+cos\ cos\left(\frac{1}{2}+2\right)$ is

a) 1 b) 2 c) 3 d) 4

12. If $-\frac{1}{\sqrt{3}}<x<\frac{1}{\sqrt{3}}$, then $\left(\frac{3x-x^3}{1-3x^2}\right)$ equals

a) $3x$ b) $-\pi+3x$ c) $\pi+3x$ d) None of these

13. $sin\ sin\left(\frac{1}{2}\frac{4}{5}\right)=$

a) $-\frac{1}{\sqrt{10}}$ b) $\frac{1}{\sqrt{10}}$ c) $-\frac{1}{10}$ d) $\frac{1}{10}$

14. The solution of $2x+3x=\frac{\pi}{4}$ is

a) $\frac{1}{6}$ b) -1 c) $\left(\frac{1}{6},-1\right)$ d) None of these

15. $\frac{4}{5}+2\frac{1}{3}$ is equal to

a) $\frac{\pi}{3}$ b) $\frac{\pi}{4}$ c) $\frac{\pi}{2}$ d) 0

16. The equation $2x+x=\frac{11\pi}{6}$ has

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

17. The value of $\left(cos\ cos\ \frac{5\pi}{3}\right)+\left(cos\ cos\ \frac{5\pi}{3}\right)$ is

a) $\frac{10\pi}{3}$ b) 0 c) $\frac{\pi}{2}$ d) $\frac{5\pi}{3}$

18. The value of $\left(\frac{\sqrt{3}}{2}\right)-\left(\frac{1}{2}\right)$ is

a) 45° b) 90° c) 15° d) 30°

19. If $x+(1-x)=x$, then x equals

a) $1,-1$ b) $1,0$ c) $0,\frac{1}{2}$ d) None of these

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

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

SESSION : 2025-26

DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth **SUBJECT : MATHS**
DATE : **DPP NO. :3**

Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

1. $5\cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)+7\sin^{-1}\left(\frac{2x}{1+x^2}\right)-4\tan^{-1}\left(\frac{2x}{1-x^2}\right)-\tan^{-1}x=5\pi$, then x is equal to
   a) 3 b) $-\sqrt{3}$ c) $\sqrt{2}$ d) $\sqrt{3}$

2. If $\sin^{-1}x+\sin^{-1}y+\sin^{-1}z=\frac{3\pi}{2}$ and $f(1)=2$, $f(p+q)=f(p).f(q),\forall\, p,q\in R$, then $x^{f(1)}+y^{f(2)}+z^{f(3)}-\frac{(x+y+z)}{x^{f(1)}+y^{f(2)}+z^{f(3)}}$ is equal to
   a) 0 b) 1 c) 2 d) 3

3. $\cot^{-1}\left(\sqrt{\cos\alpha}\right)-\tan^{-1}\left(\sqrt{\cos\alpha}\right)=x$, then $\sin x$ is equal to
   a) $\tan^{-2}\left(\frac{\alpha}{2}\right)$ b) $\cot^2\left(\frac{\alpha}{2}\right)$ c) $\tan\alpha$ d) $\cot\left(\frac{\alpha}{2}\right)$

4. The value of $\cot^{-1}9+\text{cosec}^{-1}\frac{\sqrt{41}}{4}$ is
   a) $\frac{\pi}{2}$ b) $\frac{\pi}{4}$ c) $\frac{\pi}{3}$ d) π

5. $\sum_{m=1}^{n}\tan^{-1}\left(\frac{2m}{m^4+m^2+2}\right)$ is equal to
   a) $\tan^{-1}\left(\frac{n^2+n}{n^2+n+2}\right)$ b) $\tan^{-1}\left(\frac{n^2-n}{n^2-n+2}\right)$ c) $\tan^{-1}\left(\frac{n^2+n+2}{n^2+n}\right)$ d) None of these

6. 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

7. If $\cot(\cos^{-1}x)=\sec\left(\tan^{-1}\frac{a}{\sqrt{b^2-a^2}}\right)$, then x is equal to
   a) $\frac{b}{\sqrt{2b^2-a^2}}$ b) $\frac{a}{\sqrt{2b^2-a^2}}$ c) $\frac{\sqrt{2b^2-a^2}}{a}$ d) $\frac{\sqrt{2b^2-a^2}}{b}$

8. The equation $\sin^{-1}x-\cos^{-1}x=\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$ has
   a) No solution b) Unique solution
   c) Infinite number of solutions d) None of the above

9. If $\theta=\sin^{-1}x+\cos^{-1}x-\tan^{-1}x\geq 0$, then the smallest interval in which θ lies, is given by

a) $\frac{\pi}{2} \leq \theta \leq \frac{3\pi}{4}$ b) $-\frac{\pi}{4} \leq \theta \leq 0$ c) $0 \leq \theta \leq \frac{\pi}{4}$ d) $\frac{\pi}{4} \leq \theta \leq \frac{\pi}{2}$

10. 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

11. $\sin\left(\frac{1}{2}\cos^{-1}\frac{4}{5}\right)$ is equal to

a) $-\frac{1}{\sqrt{10}}$ b) $\frac{1}{\sqrt{10}}$ c) $-\frac{1}{10}$ d) $\frac{1}{10}$

12. If $\sin^{-1}\left(\frac{3}{x}\right) + \sin^{-1}\left(\frac{4}{x}\right) = \frac{\pi}{2}$, then x is equal to

a) 3 b) 5 c) 7 d) 11

13. 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

14. If $3\sin^{-1}\frac{2x}{1+x^2} - 4\cos^{-1}\frac{1+x}{1+x^2} + 2\tan^{-1}\frac{2x}{1-x^2} = \frac{\pi}{3}$, then value of x is

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

15. Sum of infinite terms of the series
$\cot^{-1}\left(1^2 + \frac{3}{4}\right) + \cot^{-1}\left(2^2 + \frac{3}{4}\right) + \cot^{-1}\left(3^2 + \frac{3}{4}\right) + \ldots$is

a) $\frac{\pi}{4}$ b) $\tan^{-1}(2)$ c) $\tan^{-1} 3$ d) None of these

16. $2\tan^{-1}\left(\frac{1}{3}\right) + \tan^{-1}\left(\frac{1}{7}\right)$is equal to

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

17. 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

18. The value of $\sin(\cot^{-1} x)$ is

a) $\sqrt{1+x^2}$ b) x c) $(1+x^2)^{-3/2}$ d) $(1+x^2)^{-1/2}$

19. If $\cos^{-1} x + \cos^{-1} y = \frac{\pi}{2}$and $\tan^{-1} x - \tan^{-1} y = 0$,then $x^2 + xy + y^2$is equal to

a) 0 b) $\frac{1}{\sqrt{2}}$ c) $\frac{3}{2}$ d) $\frac{1}{8}$

20. If $-1 < x < 1$, 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

SESSION : 2025-26

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 α, β 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) π 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 θ and ϕ 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) β 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) $\frac{\pi}{2}$

SESSION : 2025-26

DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth **SUBJECT : MATHS**

DATE : **DPP NO. :5**

Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

1. The solution set of the equation $\tan^{-1} x - \cot^{-1} x = \cos^{-1}(2-x)$is

a) $[0,1]$ b) $[-1,1]$ c) $[1,3]$ d) None of these

2. $\cos^{-1}\left\{\frac{1}{2}x^2 + \sqrt{1-x^2}\sqrt{1-\frac{x^2}{4}}\right\} = \cos^{-1}\frac{x}{2} - \cos^{-1} x$holds for

a) $|x| \leq 1$ b) $x \in R$ c) $0 \leq x \leq 1$ d) $-1 \leq x \leq 0$

3. The solutions of the equation $\tan^{-1}(x+1) + \tan^{-1}(x-1) = \tan^{-1}\frac{8}{31}$ are

a) $-\frac{1}{4}, 8$ b) $\frac{1}{4}, -8$ c) $-4, \frac{1}{8}$ d) $4, -\frac{1}{8}$

4. If $3\sin^{-1}\frac{2x}{1+x^2} - 4\cos^{-1}\frac{1+x}{1+x^2} + 2\tan^{-1}\frac{2x}{1-x^2} = \frac{\pi}{3}$, then value of x is

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

5. 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

6. 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

7. For the principle value branch of the graph of the function $y = \sin^{-1} x, -1 \leq x \leq 1$, which among the following is a true statement?

a) Graph is symmetric about the x-axis b) Graph is symmetric about the y-axis
c) Graph is not continuous d) The line $x = 1$ is a tangent

8. If $-1 \leq x \leq -\frac{1}{\sqrt{2}}$, 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

9. If a, b, c be positive real number and the value of

$$\theta = \tan^{-1}\sqrt{\frac{a(a+b+c)}{bc}} + \tan^{-1}\sqrt{\frac{b(a+b+c)}{ca}} + \tan^{-1}\sqrt{\frac{c(c+b+c)}{ab}}$$

Then tan θ is equal to

a) 0 b) 1 c) $\frac{a+b+c}{abc}$ d) None of these

10. If $\theta \in [4\pi, 5\pi]$, then $\cos^{-1}(\cos\theta)$ equals

a) $-4\pi + \theta$ b) $5\pi - \theta$ c) $4\pi - \theta$ d) $\theta - 5\pi$

11. The trigonometric equation $\sin^{-1} x = 2\sin^{-1} a$, has a solution for

a) $\frac{1}{2} < |a| < \frac{1}{\sqrt{2}}$ b) All real values of a c) $|a| \leq \frac{1}{2}$ d) $|a| \geq \frac{1}{\sqrt{2}}$

12. The number of solutions of the equation $\sin^{-1} x + \sin^{-1} 2x = \frac{\pi}{3}$, is

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

13. If $2\sin^{-1} x = \sin^{-1}\left(2x\sqrt{1-x^2}\right)$, then x is equal to

a) $[-1,1]$ b) $\left[-\frac{1}{\sqrt{2}}, 1\right]$ c) $\left[-\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right]$ d) None of these

14. If $\cos^{-1} x + \cos^{-1} y + \cos^{-1} z = \pi$, then

a) $x^2 + y^2 = z^2$ b) $x^2 + y^2 + z^2 = 0$

c) $x^2 + y^2 + z^2 = 1 - 2xyz$ d) None of the above

15. The value of $\cot\left(\text{cosec}^{-1}\frac{5}{3} + \tan^{-1}\frac{2}{3}\right)$ is

a) $\frac{5}{17}$ b) $\frac{6}{17}$ c) $\frac{3}{17}$ d) $\frac{4}{17}$

16. 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

17. If $\tan^{-1} x + \tan^{-1} y + \tan^{-1} z = \pi$, then the value of $x + y + z$ is

a) $-xyz$ b) xyz c) $\frac{1}{xyz}$ d) 0

18. The value of $\cos^{-1}(\cos 12) - \sin^{-1}(\sin 14)$ is

a) 2 b) $8\pi - 26$ c) $4\pi + 2$ d) None of these

19. If $\frac{1}{2} \leq x \leq 1$, 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

20. The value of $\sin^{-1}\{\cos(4095°)\}$ is equal to

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

SESSION : 2025-26

DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth **SUBJECT : MATHS**
DATE : **DPP NO. :6**

Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

1. $\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{9}\right)=$
   a) $\frac{1}{2}\cos^{-1}\left(\frac{3}{5}\right)$ b) $\frac{1}{2}\sin^{-1}\left(\frac{3}{5}\right)$ c) $\frac{1}{2}\tan^{-1}\left(\frac{3}{5}\right)$ d) $\tan^{-1}\left(\frac{1}{2}\right)$

2. If $\sin^{-1}\alpha+\sin^{-1}\beta+\sin^{-1}\gamma=\frac{3\pi}{2}$,then $\alpha\beta+\alpha\gamma+\beta\gamma$ is equal to
   a) 1 b) 0 c) 3 d) -3

3. If A=$\tan^{-1}\left(\frac{x\sqrt{3}}{2k-x}\right)$and $B=\tan^{-1}\left(\frac{2x-k}{k\sqrt{3}}\right)$,then the value of $A-B$ is
   a) $10°$ b) $45°$ c) $60°$ d) $30°$

4. If in a $\Delta\, ABC, \angle A=\tan^{-1}2$ and $\angle B=\tan^{-1}3$,then angle C is equal to
   a) $\frac{\pi}{2}$ b) $\frac{\pi}{3}$ c) $\frac{\pi}{4}$ d) None of these

5. If $(\tan^{-1}x)^2+(\cot^{-1}x)^2=\frac{5\pi^2}{8}$, then x equals
   a) -1 b) 1 c) 0 d) None of these

6. $4\tan^{-1}\frac{1}{5}-\tan^{-1}\frac{1}{239}$is equal to
   a) π b) $\frac{\pi}{2}$ c) $\frac{\pi}{3}$ d) $\frac{\pi}{4}$

7. 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

8. 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) $f(2)$

9. The value of $\sin^{-1}\left(\cos\frac{33\pi}{5}\right)$ is
   a) $\frac{3\pi}{5}$ b) $\frac{7\pi}{5}$ c) $\frac{\pi}{10}$ d) $-\frac{\pi}{10}$

10. For the equation $\cos^{-1}x+\cos^{-1}2x+\pi=0$, then the number of real solutions is
    a) 1 b) 2 c) 0 d) ∞

11. The value of $\tan\left\{\frac{1}{2}\cos^{-1}\left(\frac{\sqrt{5}}{3}\right)\right\}$, is

a) $\frac{3+\sqrt{5}}{2}$ b) $3+\sqrt{5}$ c) $\frac{1}{2}(3-\sqrt{5})$ d) None of these

12. The value of $\sin\left[2\cos^{-1}\frac{\sqrt{5}}{3}\right]$ is

a) $\frac{\sqrt{5}}{3}$ b) $\frac{2\sqrt{5}}{3}$ c) $\frac{4\sqrt{5}}{9}$ d) $\frac{2\sqrt{5}}{9}$

13. If $x > -\frac{1}{\sqrt{3}}$, 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

14. $\cos^{-1}\left(\frac{1}{2}\right) + 2\sin^{-1}\left(\frac{1}{2}\right)$ is equal to

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

15. If $\sin\left(\sin^{-1}\frac{1}{5} + \cos^{-1}x\right) = 1$, then the value of x is

a) -1 b) 2/5 c) 1/3 d) 1/5

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

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

17. If $0 \le x < \infty$, then $\cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)$ equals

a) $2\tan^{-1}x$ b) $-2\tan^{-1}x$ c) $\pi - 2\tan^{-1}x$ d) $\pi + 2\tan^{-1}x$

18. The value of $\cos[2\tan^{-1}(-7)]$ is

a) $\frac{49}{50}$ b) $-\frac{49}{50}$ c) $\frac{24}{25}$ d) $-\frac{24}{25}$

19. The value of $\sin\left(4\tan^{-1}\frac{1}{3}\right) - \cos\left(2\tan^{-1}\frac{1}{7}\right)$ is

a) $\frac{3}{7}$ b) $\frac{7}{8}$ c) $\frac{8}{21}$ d) None of these

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

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

SESSION : 2025-26

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

SESSION : 2025-26

DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth **SUBJECT : MATHS**
DATE : **DPP NO. :8**

Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

1. If a, b, c be positive real number and the value of

$$\theta = \tan^{-1}\sqrt{\frac{a(a+b+c)}{bc}} + \tan^{-1}\sqrt{\frac{b(a+b+c)}{ca}} + \tan^{-1}\sqrt{\frac{c(c+b+c)}{ab}}$$

Then $\tan\theta$ is equal to

a) 0 b) 1 c) $\frac{a+b+c}{abc}$ d) None of these

2. If $\sin^{-1}x + \sin^{-1}y = \frac{\pi}{2}$, then $\cos^{-1}x + \cos^{-1}y$ is equal to

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

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

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

4. The value of $\cos\{\tan^{-1}(\tan 2)\}$, is

a) $\frac{1}{\sqrt{5}}$ b) $-\frac{1}{\sqrt{5}}$ c) $\cos 2$ d) $-\cos 2$

5. If $\tan^{-1}\frac{x-1}{x+2} + \tan^{-1}\frac{x+1}{x+2} = \frac{\pi}{4}$, then x is equal to

a) $\frac{1}{\sqrt{2}}$ b) $-\frac{1}{\sqrt{2}}$ c) $\pm\sqrt{\frac{5}{2}}$ d) $\pm\frac{1}{2}$

6. The sum of series

$$\tan^{-1}\frac{1}{1+1+1^2} + \tan^{-1}\frac{1}{1+2+2^2} + \tan^{-1}\frac{1}{1+3+3^2} + \cdots$$

$\infty$is equal to

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

7. The value of $'a'$for which $ax^2 + \sin^{-1}(x^2-2x+2) + \cos^{-1}(x^2-2x+2) = 0$ has a real solution, is

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

8. 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) $\frac{x+y}{1-xy}$

9. 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

10. $\cos^{-1}\frac{1}{2}+2\sin^{-1}\frac{1}{2}$ is equal to

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

11. $4\tan^{-1}\frac{1}{5}-\tan^{-1}\frac{1}{239}$ is equal to

a) π b) $\pi/2$ c) $\pi/3$ d) $\pi/4$

12. If $2\sin^{-1}x=\sin^{-1}\left(2x\sqrt{1-x^2}\right)$, then x is equal to

a) $[-1,1]$ b) $\left[-\frac{1}{\sqrt{2}},1\right]$ c) $\left[-\frac{1}{\sqrt{2}},\frac{1}{\sqrt{2}}\right]$ d) None of these

13. The value of $\cot\left(\text{cosec}^{-1}\frac{5}{3}+\tan^{-1}\frac{2}{3}\right)$, is

a) $\frac{4}{17}$ b) $\frac{5}{17}$ c) $\frac{6}{17}$ d) $\frac{3}{17}$

14. Two angles of a triangle are $\cot^{-1}2$and $\cot^{-1}3$. Then , the third angle is

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

15. If $e^{[\sin^2\alpha+\sin^4\alpha+\sin^6\alpha+\ldots\infty]\log_e 2}$ is a root of equation $x^2-9x+8=0$,where $0<\alpha<\frac{\pi}{2}$, then the principle value of $\sin^{-1}\sin\left(\frac{2\pi}{3}\right)$ is

a) α b) 2α c) $-\alpha$ d) -2α

16. If $\frac{1}{2}\le x\le 1$, 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

17. If $\sin^{-1}\left(2x\sqrt{1-x^2}\right)-2\sin^{-1}x=0$, then x belongs to the interval

a) $[-1,1]$ b) $[-1/\sqrt{2},1/\sqrt{2}]$ c) $[-1,-1/\sqrt{2}]$ d) $[1/\sqrt{2},1]$

18. 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

19. If $[\sin^{-1}\cos^{-1}\sin^{-1}x]=1$, where [.] denotes the greatest integer function, then x belongs to the interval

a) [tan sin cos 1, tan sin cos sin 1] b) (tan sin cos 1, tan sincos sin 1)
c) $[-1,1]$ d) [sin cos tan 1, sin cos sin tan 1]

20. The solution of $\tan^{-1}x+2\cot^{-1}x=\frac{2\pi}{3}$ is

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

SESSION : 2025-26

DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth **SUBJECT : MATHS**
DATE : **DPP NO. :9**

Topic :-INVERSE TRIGONOMETRICE FUNCTIONS

1. 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

2. If $-\frac{1}{2} \leq x \leq \frac{1}{2}$, 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

3. If $\tan\theta + \tan\left(\frac{\pi}{3} + \theta\right) + \tan\left(\frac{-\pi}{3} + \theta\right) = K\tan 3\theta$, then the value of K is
   a) 1 b) 1/3 c) 3 d) none of these

4. If $-1 \leq x \leq 0$, then $\cos^{-1}(2x^2 - 1)$ equals
   a) $2\cos^{-1} x$x b) $\pi - 2\cos^{-1} x$ c) $2\pi - 2\cos^{-1} x$ d) $-2\cos^{-1} x$

5. If $\alpha = \sin^{-1}\frac{\sqrt{3}}{2} + \sin^{-1}\frac{1}{3}, \beta = \cos^{-1}\frac{\sqrt{3}}{2} + \cos^{-1}\frac{1}{3}$, then
   a) $\alpha > \beta$ b) $\alpha = \beta$ c) $\alpha < \beta$ d) $\alpha + \beta = 2\pi$

6. If $x \in [-1, 1]$, then $\sin^{-1}\left(\frac{2x}{1+x^2}\right)$ equals
   a) $2\tan^{-1} x$ b) $\pi - 2\tan^{-1} x$ c) $-\pi - 2\tan^{-1} x$ d) None of these

7. $\sin\left[3\sin^{-1}\left(\frac{1}{5}\right)\right]$ is equal to
   a) $\frac{71}{125}$ b) $\frac{74}{125}$ c) $\frac{3}{5}$ d) $\frac{1}{2}$

8. 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

9. The value of x for which $\sin[\cot^{-1}(1 + x)] = \cos(\tan^{-1} x)$ is
   a) $\frac{1}{2}$ b) 1 c) 0 d) $-\frac{1}{2}$

10. $\tan\left[\frac{\pi}{2} + \frac{1}{2}\cos^{-1}\left(\frac{a}{b}\right)\right] + \tan\left[\frac{\pi}{4} - \frac{1}{2}\cos^{-1}\left(\frac{a}{b}\right)\right]$ is equal to
    a) $\frac{2a}{b}$ b) $\frac{2b}{a}$ c) $\frac{a}{b}$ d) $\frac{b}{a}$

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

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

12. The value of $'a'$for which $ax^2+\sin^{-1}(x^2-2x+2)+\cos^{-1}(x^2-2x+2)=0$ has a real solution, is

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

13. $\cos^{-1}\left(\frac{-1}{2}\right)-2\sin^{-1}\left(\frac{1}{2}\right)+3\cos^{-1}\left(\frac{-1}{\sqrt{2}}\right)-4\tan^{-1}(-1)$equals

a) $\frac{19\pi}{12}$ b) $\frac{35\pi}{12}$ c) $\frac{47\pi}{12}$ d) $\frac{43\pi}{12}$

14. If $\theta=\sin^{-1}x+\cos^{-1}x-\tan^{-1}x, 1\le x<\infty$, then the smallest interval in which θlies is

a) $\frac{\pi}{2}\le\theta\le\frac{3\pi}{4}$ b) $0\le\theta\le\frac{\pi}{4}$ c) $-\frac{\pi}{4}\le\theta\le 0$ d) $\frac{\pi}{4}\le\theta\le\frac{\pi}{2}$

15. If $4\sin^{-1}x+\cos^{-1}x=\pi$, then x is equal to

a) 0 b) 1/2 c) -1/2 d) 1

16. The value of $\sin^{-1}\left(\cos\frac{33\pi}{5}\right)$ is

a) $\frac{3\pi}{5}$ b) $\frac{7\pi}{5}$ c) $\frac{\pi}{10}$ d) $-\frac{\pi}{10}$

17. 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) $\frac{a_n-a_1}{a_n+a_1}$

18. 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

19. If $A=\tan^{-1}x, x\in R$, then the value of $\sin 2A$ is

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

20. The value of x, where $x>0$ and $\tan\left\{\sec^{-1}\left(\frac{1}{x}\right)\right\}=\sin(\tan^{-1}2)$ is

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

SESSION : 2025-26

DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth **SUBJECT : MATHS**

DATE : **DPP NO. :10**

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
   $\cot^{-1} 2 + \cot^{-1} 8 + \cot^{-1} 18 + \cot^{-1} 32 + \ldots$ is
   a) π 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 $-1 \le x \le -\frac{1}{2}$, 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 $2\tan^{-1}(\cos x) = \tan^{-1}(2\,\mathrm{cosec}\,x)$, 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) ∞

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) $0 \le x < \frac{1}{\sqrt{2}}$ d) $-1 \le x < \frac{1}{\sqrt{2}}$