QB365 Question Bank Software Study Materials

Inverse Trigonometric Functions 50 Important 1Marks Questions With Answers (Book Back and Creative)

12th Standard

Maths

Total Marks : 50

50 x 1 = 50

1) The value of $\sin^{-1}(\cos x)$, $0 \leq x \leq \pi$ is

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

2) If $\sin^{-1} x + \sin^{-1} y = \frac{2\pi}{3}$; then $\cos^{-1} x + \cos^{-1} y$ is equal to

(a) $\frac{2\pi}{3}$ **(b)** $\frac{\pi}{3}$ (c) $\frac{\pi}{6}$ (d) π

3) $\sin^{-1}\frac{3}{5} - \cos^{-1}\frac{12}{13} + \sec^{-1}\frac{5}{3} - \operatorname{cosec}^{-1}\frac{13}{12}$ is equal to

(a) 2π (b) π **(c) 0** (d) $\tan^{-1}\frac{12}{65}$

4) If $\sin^{-1}x = 2\sin^{-1}\alpha$ has a solution, then

(a) $|\alpha| \leq \frac{1}{\sqrt{2}}$ (b) $|\alpha| \geq \frac{1}{\sqrt{2}}$ (c) $|\alpha| < \frac{1}{\sqrt{2}}$ (d) $|\alpha| > \frac{1}{\sqrt{2}}$

5) $\sin^{-1}(\cos x) = \frac{\pi}{2} - x$ is valid for

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

6) If $\sin^{-1} x + \sin^{-1} y + \sin^{-1} z = \frac{3\pi}{2}$, the value of $x^{2017} + y^{2018} + z^{2019} - \frac{9}{x^{101}+y^{101}+z^{101}}$ is

(a) 0 (b) 1 (c) 2 (d) 3

7) If $\cot^{-1} x = \frac{2\pi}{5}$ for some $x \in R$, the value of $\tan^{-1} x$ is

(a) $-\frac{\pi}{10}$ (b) $\frac{\pi}{5}$ **(c)** $\frac{\pi}{10}$ (d) $-\frac{\pi}{5}$

8) The domain of the function defined by $f(x) = \sin^{-1}\sqrt{x-1}$ is

(a) [1, 2] (b) [-1, 1] (c) [0, 1] (d) [-1, 0]

9) If $x = \frac{1}{5}$, the value of $\cos(\cos^{-1}x + 2\sin^{-1}x)$ is

(a) $-\sqrt{\frac{24}{25}}$ (b) $\sqrt{\frac{24}{25}}$ (c) $\frac{1}{5}$ **(d)** $-\frac{1}{5}$

10) $\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{9}\right)$ is equal to

(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)** $\tan^{-1}\left(\frac{1}{2}\right)$

11) If the function $f(x) = \sin^{-1}(x^2 - 3)$, then x belongs to

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

12) If $\cot^{-1} 2$ and $\cot^{-1} 3$ are two angles of a triangle, then the third angle is

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

13) $\sin^{-1}\left(\tan\frac{\pi}{4}\right) - \sin^{-1}\left(\sqrt{\frac{3}{x}}\right) = \frac{\pi}{6}$. Then x is a root of the equation

(a) $x^2 - x - 6 = 0$ **(b) $x^2 - x - 12 = 0$** (c) $x^2 + x - 12 = 0$ (d) $x^2 + x - 6 = 0$

14) $\sin^{-1}(2\cos^2 x - 1) + \cos^{-1}(1 - 2\sin^2 x) =$

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

15) If $\cot^{-1}(\sqrt{\sin\alpha}) + \tan^{-1}(\sqrt{\sin\alpha}) = u$, then cos2u is equal to

(a) $\tan^2\alpha$ (b) 0 **(c) -1** (d) $\tan 2\alpha$

16) If $|x| \leq 1$, then 2 $\tan^{-1}$ x-$\sin^{-1}\frac{2x}{1+x^2}$ is equal to

(a) $\tan^{-1}x$ (b) $\sin^{-1}x$ **(c) 0** (d) π

17) The equation $\tan^{-1} x - \cot^{-1} x = \tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$ has

(a) no solution **(b) unique solution** (c) two solutions (d) infinite number of solutions

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

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

19) If $\sin^{-1}\frac{x}{5} + \text{cosec}^{-1}\frac{5}{4} = \frac{\pi}{2}$, then the value of x is

(a) 4 (b) 5 (c) 2 **(d) 3**

20) sin ($\tan^{-1}$x), |x| < 1 is equal to

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

21) If $sin^{-1}x - cos^{-1}x = \frac{\pi}{6}$ then _____

(a) $\frac{1}{2}$ **(b)** $\frac{\sqrt{3}}{2}$ (c) $\frac{-1}{2}$ (d) none of these

22) The number of solutions of the equation $tan^{-1}2x + tan^{-1}3x = \frac{\pi}{4}$ _____

(a) 2 (b) 3 (c) 1 (d) none

23) The number of real solutions of the equation \(\sqrt { 1+cos2x } ={ 2sin }^{ -1 }\left(sinx \right) ,-\pi is _____

(a) 0 (b) 1 (c) 2 (d) infinte

24) $tan^{-1}\left(\frac{1}{4}\right) + tan^{-1}\left(\frac{2}{11}\right)$ = _____

(a) 0 (b) $\frac{1}{2}$ (c) -1 (d) none

25) If $\tan^{-1}(3) + \tan^{-1}(x) = \tan^{-1}(8)$ then x = _____

(a) 5 **(b)** $\frac{1}{5}$ (c) $\frac{5}{14}$ (d) $\frac{14}{5}$

26) $sin\left\{2cos^{-1}\left(\frac{-3}{5}\right)\right\} =$ _____

(a) $\frac{6}{15}$ (b) $\frac{24}{25}$ (c) $\frac{4}{5}$ **(d)** $\frac{-24}{25}$

27) If $tan^{-1}\left(\frac{x+1}{x-1}\right) + tan^{-1}\left(\frac{x-1}{x}\right) = tan^{-1}(-7)$ then x is _____

(a) 0 (b) -2 (c) 1 **(d) 2**

28) If $cos^{-1}x > x > sin^{-1}x$ then _____

(a) \(\cfrac { 1 }{ \sqrt { 2 } } (b) $0 \leq x < \frac{1}{\sqrt{2}}$ (c) $-1 \leq x < \frac{1}{\sqrt{2}}$ (d) x > 0

29) In a ΔABC if C is a right angle, then $tan^{-1}\left(\frac{a}{b+c}\right) + tan^{-1}\left(\frac{b}{c+a}\right) =$ _____

(a) $\frac{\pi}{3}$ **(b)** $\frac{\pi}{4}$ (c) $\frac{5\pi}{2}$ (d) $\frac{\pi}{6}$

30) $cot\left(\frac{\pi}{4} - cot^{-1}3\right)$

(a) 7 (b) 6 (c) 5 (d) none

31) The value of tan $\left(cos^{-1}\frac{3}{5} + tan^{-1}\frac{1}{4}\right)$ is _____

(a) $\frac{19}{8}$ **(b)** $\frac{8}{19}$ (c) $\frac{19}{12}$ (d) $\frac{3}{4}$

32) The value of sin 2($\tan^{-1}$ 0.75) is _____

(a) 0.75 (b) 1.5 **(c) 0.96** (d) $\sin^{-1}(1.5)$

33) If x > 1, then $2tan^{-1}x + sin^{-1}\left(\frac{2x}{1+x^2}\right)$ _____

(a) 4 $\tan^{-1}$x (b) 0 (c) $\frac{\pi}{2}$ **(d)** π

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

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

35) The pricipal value of $sin^{-1}\left(\frac{-1}{2}\right)$ is _____

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

36) $tan^{-1}\left(tan\frac{9\pi}{8}\right)$

(a) $\frac{9\pi}{8}$ (b) $\frac{-9\pi}{8}$ **(c)** $\frac{\pi}{8}$ (d) $\frac{-\pi}{8}$

37) The value of $\cos^{-1}\left(\cos\frac{7\pi}{6}\right)$ is _____

(a) $\frac{\pi}{6}$ (b) $-\frac{\pi}{6}$ (c) $\frac{7\pi}{6}$ **(d)** $\frac{5\pi}{6}$

38) The principal value of $\sin^{-1}\left\{\sin\frac{5\pi}{6}\right\}$ is _____

(a) $\frac{\pi}{6}$ (b) $\frac{5\pi}{6}$ (c) $\frac{7\pi}{6}$ (d) None of these

39) The value of $\sin\left[\frac{\pi}{3} - \sin^{-1}\left(-\frac{1}{2}\right)\right]$ is _____

(a) 0 (b) -1 (c) 1 (d) $\frac{1}{2}$

40) The value of $\sin\left[arc\ cos\left(\frac{-1}{2}\right)\right]$ is _____

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

41) The principal value of $\cos^{-1}$ (cos 5) is _____

(a) 5 (b) $\pi - 5$ (c) $5 - \pi$ **(d)** $2\pi - 5$

42) The value of $\cos\left[\frac{\pi}{6} + \cos^{-1}\left(\frac{-1}{2}\right)\right]$ is equal to _____

(a) $\frac{\sqrt{3}}{2}$ **(b)** $-\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

43) Solution of the equation $\cot^{-1} x + \sin^{-1}\frac{1}{\sqrt{5}} = \frac{\pi}{4}$ _____

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

44) $\cos\left[\tan^{-1}\left\{\sin\left(\cot^{-1} x\right)\right\}\right]$ is equal to _____

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

45) The value of $\sin\left[\sin^{-1}\frac{\sqrt{5}}{4} + \tan^{-1}\sqrt{\frac{5}{11}}\right]$ is _____

(a) $\frac{\sqrt{5}}{4\sqrt{11}}$ (b) $\frac{4}{\sqrt{35}}$ **(c)** $\frac{\sqrt{55}}{8}$ (d) None of these

46) If $\sum_{i=1}^{2n} \cos^{-1} x = 0$, then $\sum_{i=1}^{2n} x$ is _____

(a) n **(b) 2n** (c) $\frac{n(n+1)}{2}$ (d) None of these

47) If $\sin\left(\sin^{-1}\frac{1}{5} + \cos^{-1} x\right) = 1$ then x is equal to

(a) 1 (b) 0 (c) $\frac{4}{5}$ **(d)** $\frac{1}{5}$

48) 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

49) If $\sin^{-1}\left(x-\frac{x}{2}+\frac{x}{4}-\ldots\right)+\cos^{-1}\left(x-\frac{x}{2}+\frac{x}{4}-\ldots\right)=\frac{\pi}{2}$ For $0<|x|<\sqrt{2}$, then x equals _____

(a) $\frac{1}{2}$ **(b) 1** (c) $-\frac{1}{2}$ (d) -1

50) If $\cos^{-1}x>\sin^{-1}x$ then _____

(a) x < 0 (b) -1 < x < 0 (c) $0\leq x<\frac{1}{\sqrt{2}}$ **(d)** $-1\leq x<\frac{1}{\sqrt{2}}$