CHAPTER –2

INVERSE TRIGONOMETRIC FUNCTION

TRUE FALSE TYPE QUESTIONS

Sl.No.	Question(Read the statements and answer TRUE or False)
1.	The domain of the function $\cos^{-1}(2x-1)$ is [0, 1].
2.	The domain of the function $\sin^{-1}\sqrt{x-1}$ is [0, 1].
3.	The value of $\sin^{-1}(\sin\frac{3\pi}{5})$ is $\frac{2\pi}{5}$
4.	The value of the expression $(\cos^{-1}x)^2$ is equal to $\sec^2 x$.
5.	The graphs of inverse trigonometric functions can be obtained from the graph of their corresponding trigonometric functions by interchanging x- and y-axes.
6.	The value of $\cot[\cos^{-1}\frac{7}{25}]$is $\frac{24}{7}$.
7.	The value of the expression $\tan[\frac{\sin^{-1}x+\cos^{-1}x}{2}]$ is 2 when $x=\frac{\sqrt{3}}{2}$.
8.	The principal value of $\tan^{-1}\sqrt{3}$is $\frac{\pi}{3}$.
9.	If $\cos^{-1}x > \sin^{-1}x$, then $0 \le x < \frac{\pi}{4}$.
10.	$\sin^{-1}(\sin\frac{2\pi}{3})=\frac{\pi}{3}$
11.	The graph of inverse trigonometric function can be obtained from the graph of their corresponding trigonometric function by interchanging x and y axes.
12.	The value of the expression $(\cos{-1}\ x)^2$ is equal to $\sec^2$ x.
13.	The least numerical value, either positive or negative of angle θ is called principal value of the inverse trigonometric function.
14.	The principal value of sin–1 [cos(sin-1(1/2))] is π/3.
15.	$\sin^{-1}2+\cos^{-1}2 = \pi/2$
16.	The principle value of $\tan^{-1}\sqrt{3}$ is π/3
17.	If $y = 2\tan^{-1}x + \sin^{-1}(2x)/(1+x^2)$ for all x, then $-2\pi<y<2\pi$
18.	The value of $\cos(\sin^{-1}x + \cos^{-1}x)$, $\lvert x\rvert \le\le 1$ is 1
19.	The principal value of $\sin^{-1}(1/\sqrt{2})$ is π/4
20.	$\cos^{-1}(cos\frac{7\pi}{6})=\frac{7\pi}{6}$.
21.	The principal value branch of $\csc^{-1}x$ is $\left[-\frac{\pi}{2},\frac{\pi}{2}\right]-\{0\}$.
22.	The domain of the function $\cos^{-1}(2x-1)$ is (0 , 1) .

23.	The principal value of $\tan^{-1}(-\sqrt{3})$is $-\frac{\pi}{6}$.
24.	If $3\tan^{-1}x + \cot^{-1}x = \pi$, then x equals 1 .
25.	$\cos^{-1}(-x) = -\cos^{-1}x, \forall x \in [-1, 1]$.
26.	The value of $\tan^{-1}\sqrt{3} + \sec^{-1}(-2)\ is -\frac{\pi}{3}$
27.	$\tan^{-1}x + \tan^{-1}y = \frac{\pi}{2}, \forall\, x, y \in \boldsymbol{R}$.
28.	The principal value of $\sin^{-1}(-\frac{\sqrt{3}}{2})$is $-\frac{\pi}{3}$.
29.	$\tan^{-1}(\sin\left(-\frac{\pi}{2}\right))$ is equal to $-\frac{\pi}{4}$
30.	The principal value of the expression: $\cos^{-1}[\cos(-680^0)]$ is $\frac{2\pi}{9}$.
31.	The range of $\tan^{-1}$ x is R.
32.	$\sin^{-1}(-\frac{1}{2}) + \cos^{-1}(-\frac{1}{2})$ is π.
33.	$\cos(\sin^{-1}\frac{3}{5} + \cot^{-1}\frac{3}{2}) = \frac{6}{5\sqrt{13}}$.
34.	If $\tan^{-1}x+\tan^{-1}y+\tan^{-1}z=\pi$, then x+y+z= xyz.
35.	The value of $\cos^{-1}(\cos\frac{3\pi}{2})$ is π.
36.	The domain of $f(x)=\sin^{-1}x$ is [-1,1].
37.	The value of $\sin(\frac{\pi}{3} - \sin^{-1}(-\frac{1}{2}))$ is 1.
38.	If $\sin^{-1}(\frac{x}{13}) + \text{cosec}^{-1}(\frac{13}{12}) = \frac{\pi}{2}$, then the value of x is 5.
39.	The value of $\tan^{-1}(\frac{\sqrt{3}}{2}) + \tan^{-1}(\frac{1}{\sqrt{3}})$ is equal to $\tan^{-1}(\sqrt{3})$.
40.	All trigonometric functions have inverse over their respective domains.
41.	The values of the expression $(\cos^{-1}x)^2$ is equal to $\sec^2x$.
42.	The domain of the trigonometric functions can be restricted to any one of their branch (not necessarily principal value) in order to obtain their inverse functions.
43.	The least numerical value, either positive or negative of angle is called principal value of the inverse trigonometric function.
44.	The graph of inverse trigonometric function can be obtained from the graph of their corresponding trigonometric function by interchanging x and y axes.
45.	The minimum value of n for which $\tan^{-1}(n/\pi) > (\pi/4)$, where n is a natural number, is valid is 5.
46.	The principal value of $\sin^{-1}[\cos\{\sin^{-1}(1/2)\}]$ is π/3.
47.	The set of values of $\sec^{-1}(1/2)$ is Φ.
48.	The principal value of $\cos^{-1}(-1/2)$is π/3.
49.	The principal value of $\tan^{-1}\sqrt{3}$ is π/3.
50.	The range of $\sec^{-1}x$ is (0,π)
51.	The principal value of $\sin^{-1}\sin\frac{3\pi}{4}$ is $\frac{\pi}{4}$
52.	The value of $\sin(-600^o)$ is $\frac{1}{2}$
53.	The range of $\tan^{-1}x$ is $(-\frac{\pi}{2}, \frac{\pi}{2})$

54.	$\sin^{-1} x + \cos^{-1} x = \frac{\pi}{2}\ if -1 \leq x \leq 1$
55.	The value of $\sin \cot^{-1} x$ is $\frac{1}{1+x^2}$
56.	The value of $\sin^{-1} \cos \frac{53\pi}{5}$ is $\frac{-\pi}{10}$
57.	$2 \tan^{-1}\left(\frac{2}{3}\right) = \cos^{-1} \frac{10}{13}$
58.	The value of $\cos(\sin^{-1} x)$ is $\sqrt{1+x^2}$
59.	If $\tan^{-1} \frac{3}{4}$= x then sinx is equal to $\frac{3}{5}$
60.	If $\cos(\sin^{-1}2/5 + \cos^{-1} x) = 0$ then x is equal to 1/5.
61.	The value of $\sin (2 \tan^{-1} (0.75))$ is equal to 24/25.
62.	The value of $\cos^{-1} (\cos 3\pi/2)$ is equal to $\pi/2$.
63.	The value of expression $2 \sec^{-1} (2) + \sin^{-1} (1/2)$ is $\pi/2$.
64.	The value of $\sin [\cos^{-1}(7/25)]$ is 24/25.
65.	The value of $\sin^{-1}(-1/2)$ is $7\pi/6$
66.	The value of $\sec^{-1}(-2/\sqrt{3})$ is $\pi/6$
67.	The value of $\cos^{-1}(1/2)$ is $\pi/6$
68.	The value of $\cos^{-1}[\cos(33\pi/5)]$ is $3\pi/5$
69.	If $3 \tan^{-1} x + \cot^{-1} x = \pi$, then x equals to 1.
70.	The graph of inverse trigonometric function can be obtained from the graph of their corresponding trigonometric function by interchanging x and y axes.
71.	All trigonometric functions have inverse over their respective domains.
72.	The value of the expression $(\cos^{-1} x)^2$ is equal to $\sec^2 x$.
73.	The domain of trigonometric functions can be restricted to any one of their branch (not necessarily principal value) in order to obtain their inverse functions.
74.	The least numerical value, either positive or negative of angle θ is called principal value of the inverse trigonometric function.
75.	The principal value of $\left[cos\ cos \frac{1}{2}\right]$ is $\frac{\pi}{3}$
76.	If $\cos (\tan^{-1} x + \cot^{-1}\sqrt{3}) = 0$, then value of x is 3.
77.	The value of $\cos (\sin^{-1} x + \cos^{-1} x)$, $\lvert x \rvert \leq 1$ is 1
78.	The principal value of $\frac{-1}{2}) \ is \frac{\pi}{3}$
79.	The principal value branch of $\sec^{-1}$ is $[0, \pi] - \left\{\frac{\pi}{2}\right\}$
80.	If $\sin^{-1} x = y$ then $-\frac{\pi}{2} < y \leq 0$
81.	The value of $tan^2(\sec^{-1} 2)$ is -3
82.	The smallest numerical value, either positive or negative, of angle θ is called the principal value of the function.
83.	$\tan(cot^{-1} x) = \cot(\tan^{-1} x)$ is invalid for all real values of x.
84.	tan (1) is always greater than $\tan^{-1}(1)$.
85.	The domain of $\sin^{-1}(-x^2)\ is$ [-1 , 1].
86.	The value of expression $(cos^{-1})^2$ is equal to $(\sec x)^2$
87.	The value of $cot^2(co \sec^{-1} 2)$ is 3.

88.	Whenever no branch of an inverse trigonometric function is mentioned, we mean the principal value branch.
89.	The value of $\tan^{-1}(\sin -\pi/2)$ is $\frac{\pi}{4}$
90.	$f(x) = \cot^{-1} x$ is not defined for every $x \in \mathbb{R}$ such that x<-1.
91.	Domain of both $\sin^{-1} x$ and $\cos^{-1} x$ is [-1,1].
92.	Sum of any two inverse trigonometric function is not periodic.
93.	For every real number x, $\cot(\cot^{-1} x)$ is equal to x.
94.	Range of $\tan^{-1}\left(\frac{2x}{1+x^2}\right)$ is $\left[\frac{-\pi}{4}, \frac{\pi}{4}\right]$.
95.	If $\sin^{-1} x + \cos^{-1}\left(\frac{-1}{2}\right) = \frac{\pi}{2}$, then value of x is $\frac{1}{2}$.
96.	$\csc^{-1} x + \sec^{-1} x = \frac{\pi}{2}$ for any x such that $-1 \leq x \leq 1$.
97.	Value of $\cot^{-1} x$ decreases as there is increase in value of x.
98.	The equation $\tan^{-1} x = x$ has no solution .
99.	$2\cos^{-1} x = \cos^{-1}(2x^2 - 1)$ holds true for any real number x such that $x \in \left[\frac{1}{\sqrt{2}}, 1\right]$.

ANSWERS

Q.NO	ANS	Q.NO	ANS	Q.NO	ANS
1	TRUE	34	TRUE	67	TRUE
2	FALSE	35	FALSE	68	TRUE
3	TRUE	36	TRUE	69	TRUE
4	FALSE	37	TRUE	70	TRUE
5	TRUE	38	TRUE	71	FALSE
6	FALSE	39	FALSE	72	FALSE
7	FALSE	40	FALSE	73	TRUE
8	TRUE	41	FALSE	74	TRUE
9	TRUE	42	TRUE	75	TRUE
10	TRUE	43	TRUE	76	FALSE
11	TRUE	44	TRUE	77	TRUE
12	FALSE	45	FALSE	78	FALSE
13	TRUE	46	TRUE	79	TRUE
14	TRUE	47	TRUE	80	FALSE
15	FALSE	48	FALSE	81	FALSE
16	TRUE	49	TRUE	82	TRUE
17	TRUE	50	FALSE	83	FALSE
18	FALSE	51	TRUE	84	TRUE
19	TRUE	52	FALSE	85	TRUE
20	TRUE	53	TRUE	86	FALSE
21	TRUE	54	TRUE	87	TRUE
22	FALSE	55	FALSE	88	TRUE
23	FALSE	56	TRUE	89	FALSE
24	TRUE	57	FALSE	90	FALSE
25	FALSE	58	TRUE	91	TRUE
26	FALSE	59	TRUE	92	FALSE
27	FALSE	60	FALSE	93	TRUE
28	TRUE	61	TRUE	94	TRUE
29	TRUE	62	TRUE	95	FALSE
30	TRUE	63	FALSE	96	FALSE
31	FALSE	64	TRUE	97	TRUE
32	FALSE	65	TRUE	98	FALSE
33	TRUE	66	FALSE	99	TRUE

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