INDIAN SCHOOL AL WADI AL KABIR

MCQ – Inverse Trigonometric Functions (2023-24)

Class: XII | Sub: MATHEMATICS | 27-03-2023

MULTIPLE CHOICE QUESTIONS

Choose and write the correct option in the following questions.

1. The value of $\tan^{-1}(\sqrt{3}) + \cos^{-1}\left(-\frac{1}{2}\right)$ corresponding to principal branches is

   (a) $-\frac{\pi}{12}$ (b) 0 ✓(c) π (d) $\frac{\pi}{3}$

2. The value of $\cot(\sin^{-1} x)$ is [*NCERT Exemplar*]

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

3. The value of $\sin^{-1}\left(\cos\frac{\pi}{9}\right)$ is [*NCERT Exemplar*]

   (a) $\frac{\pi}{9}$ (b) $\frac{5\pi}{9}$ (c) $\frac{-5\pi}{9}$ ✓(d) $\frac{7\pi}{18}$

4. Let $\theta = \sin^{-1}(\sin(-600°))$, then value of θ is

   ✓(a) $\frac{\pi}{3}$ (b) $\frac{\pi}{2}$ (c) $\frac{2\pi}{3}$ (d) $\frac{-2\pi}{3}$

5. The value of the expression $2\sec^{-1}2 + \sin^{-1}\left(\frac{1}{2}\right)$ is [*NCERT Exemplar*]

   (a) $\frac{\pi}{6}$ ✓(b) $\frac{5\pi}{6}$ (c) $\frac{7\pi}{6}$ (d) 1

6. The value of $\tan^2(\sec^{-1} 2) + \cot^2(\operatorname{cosec}^{-1} 3)$ is

   (a) 5 ✓(b) 11 (c) 13 (d) 15

7. The value of $\cot\left[\cos^{-1}\left(\frac{7}{25}\right)\right]$ is [*NCERT Exemplar*]

   (a) $\frac{25}{24}$ (b) $\frac{25}{7}$ (c) $\frac{24}{25}$ ✓(d) $\frac{7}{24}$

8. $\sin(\tan^{-1} x)$, $|x| < 1$ 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) $\frac{x}{\sqrt{1+x^2}}$

9. $\tan^{-1}\sqrt{3} - \sec^{-1}(-2)$ is equal to

   (a) π ✓(b) $-\frac{\pi}{3}$ (c) $\frac{\pi}{3}$ (d) $\frac{2\pi}{3}$

10. The value of $\sin[\cot^{-1}\{\tan(\cos^{-1} x)\}]$ is

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

MCQ – Inverse Trigonometric Functions (2023-24)

Class: XII | Sub: MATHEMATICS | 27-03-2023

11. If $\theta = \sin^{-1}(\sin 600°)$ then the value of θ is

(a) $\frac{\pi}{3}$ ✓(b) $-\frac{\pi}{3}$ (c) 0 (d) $\frac{2\pi}{3}$

12. $\cos^{-1}\left[\cos\frac{7\pi}{6}\right]$ is equal to

(a) $\frac{7\pi}{6}$ ✓(b) $\frac{5\pi}{6}$ (c) $\frac{\pi}{3}$ (d) $\frac{\pi}{6}$

13. $\sin\left[\frac{\pi}{3} - \sin^{-1}\left(-\frac{1}{2}\right)\right]$ is equal to

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ ✓(d) 1

14. $\tan^{-1}\sqrt{3} - \cot^{-1}(-\sqrt{3})$ is equal to

(a) π ✓(b) $-\frac{\pi}{2}$ (c) 0 (d) $2\sqrt{3}$

15. $\cos^{-1}\left[\cos\left(\left(-\frac{17}{15}\right)\pi\right)\right]$ is equal to

(a) $\frac{17\pi}{15}$ ✓(b) $\frac{13\pi}{15}$ (c) $\frac{3\pi}{15}$ (d) $-\frac{17\pi}{15}$

16. Which of the following is the principal value branch of $\cos^{-1} x$?

(a) $\left[\frac{-\pi}{2}, \frac{\pi}{2}\right]$ (b) $(0, \pi)$ ✓(c) $[0, \pi]$ (d) $(0, \pi) - \left\{\frac{\pi}{2}\right\}$

17. Which of the following is the principal value branch of $\text{cosec}^{-1}x$?

(a) $\left(\frac{-\pi}{2}, \frac{\pi}{2}\right)$ (b) $(0, \pi) - \left\{\frac{\pi}{2}\right\}$ (c) $\left\{-\frac{\pi}{2}, \frac{\pi}{2}\right\}$ ✓(d) $\left[\frac{-\pi}{2}, \frac{\pi}{2}\right] - \{0\}$

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

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

19. The domain of the function $\cos^{-1}(2x - 1)$ is

✓(a) $[0, 1]$ (b) $[-1, 1]$ (c) $(-1, 1)$ (d) $[0, \pi]$

20. The value of $\cos^{-1}\left(\cos\frac{3\pi}{2}\right)$ is

✓(a) $\frac{\pi}{2}$ (b) $\frac{3\pi}{2}$ (c) $\frac{5\pi}{2}$ (d) $\frac{7\pi}{2}$

21. The value of $2\sec^{-1}2 + \sin^{-1}\left(\frac{1}{2}\right)$ is

(a) $\frac{\pi}{6}$ ✓(b) $\frac{5\pi}{6}$ (c) $\frac{7\pi}{6}$ (d) 1

22. The value of $\cot\left[\cos^{-1}\left(\frac{7}{25}\right)\right]$ is

(a) $\frac{25}{24}$ (b) $\frac{25}{7}$ (c) $\frac{24}{25}$ ✓(d) $\frac{7}{24}$

MCQ – Inverse Trigonometric Functions (2023-24)

Class: XII Sub: MATHEMATICS 27-03-2023

23. The principal value of $\sin^{-1}\frac{1}{2}$ is

✓(a) $\frac{\pi}{6}$ (b) $\frac{5\pi}{6}$ (c) $\frac{-\pi}{6}$ (d) Both (a) & (b)

24. The principal value of $\text{cosec}^{-1}(-1)$ is

✓(a) $\frac{-\pi}{2}$ (b) 0 (c) $\frac{\pi}{2}$ (d) $\frac{3\pi}{2}$

25. The value of $\tan^{-1}(\sqrt{3}) + \cot^{-1}(-1) + \sec^{-1}\left(\frac{-2}{\sqrt{3}}\right)$ is

(a) $\frac{-\pi}{12}$ (b) $\frac{11\pi}{12}$ (c) $\frac{5\pi}{4}$ ✓(d) $\frac{23\pi}{12}$

26. The value of $2\cos^{-1}\left(\frac{-1}{2}\right) + 2\sin^{-1}\left(\frac{-1}{2}\right) - \cos^{-1}(-1)$ is

✓(a) 0 (b) $\frac{\pi}{2}$ (c) π (d) 2π

27. The value of $\sec^{-1}\left(\sec\frac{4\pi}{3}\right)$ is

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

28. The value of $\cos^{-1}(-1) + \sin^{-1}(1)$ is

(a) $\frac{-3\pi}{2}$ (b) $\frac{\pi}{2}$ (c) π ✓(d) $\frac{3\pi}{2}$

29. The value of $\cos^{-1}\left(\cos\frac{5\pi}{3}\right) + \sin^{-1}\left(\sin\frac{5\pi}{3}\right)$ is equal to

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

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

(a) 1 (b) $\frac{1}{\sqrt{3}}$ ✓(c) $\sqrt{3}$ (d) 0

31. The value of $\sin^{-1}\left[-\left(\frac{1}{2}\right)\right] + \cos^{-1}\left[-\left(\frac{1}{2}\right)\right] + \cot^{-1}(-\sqrt{3}) + \text{cosec}^{-1}(\sqrt{2}) + \tan^{-1}(-1) + \sec^{-1}(\sqrt{2})$ equals

(a) $\frac{9\pi}{4}$ ✓(b) $\frac{19\pi}{12}$ (c) $\frac{3\pi}{2}$ (d) $\frac{\pi}{2}$