PARISHRAM 2026

Mathematics

Inverse Trigonometric Functions

DPP: 1

Q1 The domain of $\sec^{-1} x$ is

(A) $(-\infty, \infty)$

(B) $(-\infty, -1] \cup [1, \infty)$

(C) $[-1, 1]$

(D) None of these

Q2 The domain of $\sin^{-1} x$ is equal to

(A) $(-1, 1]$ (B) $(-1, 1)$

(C) $[-1, 1)$ (D) $[-1, 1]$

Q3 Which of the following corresponds to the principal value branch of $\sec^{-1} x$?

(A) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

(B) $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

(C) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right) - \{0\}$

(D) $[0, \pi] - \left\{\frac{\pi}{2}\right\}$

Q4 Which of the following corresponds to the principal value branch of $\sin^{-1} x$?

(A) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

(B) $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

(C) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right) - \{0\}$

(D) $(0, \pi)$

Q5 Which of the following corresponds to the principal value branch of $\tan^{-1} x$?

(A) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

(B) $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

(C) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right) - \{0\}$

(D) $(0, \pi)$

Q6 The principal value of $\csc^{-1} x$ lies in the interval

(A) $\left(\frac{-\pi}{2}, \frac{\pi}{2}\right) - \{0\}$

(B) $\left[\frac{-\pi}{2}, \frac{\pi}{2}\right] - \{0\}$

(C) $\left(\frac{-\pi}{2}, \frac{\pi}{2}\right)$

(D) $\left[\frac{-\pi}{2}, \frac{\pi}{2}\right]$

Q7 The principal value of $\cot^{-1} x$ lies in the interval.

(A) $(0, \pi)$

(B) $[0, \pi]$

(C) $\left(\frac{-\pi}{2}, \frac{\pi}{2}\right)$

(D) $\left[\frac{-\pi}{2}, \frac{\pi}{2}\right]$

Q8 Which of the following intervals can be taken as range for $\cos^{-1} x$ other than the principal value branch?

(A) $\left[\frac{-\pi}{2}, \frac{\pi}{2}\right]$

(B) $[0, \pi]$

(C) $\left[\frac{\pi}{2}, \frac{3\pi}{2}\right]$

(D) $[\pi, 2\pi]$

Q9 Which of the following intervals can be taken as range for $\sin^{-1} x$ other than the principal value branch?

(A) $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right] \sim \{0\}$

(B) $\left[\frac{-\pi}{2}, \frac{\pi}{2}\right]$

(C) $\left[\frac{\pi}{2}, \frac{3\pi}{2}\right]$

(D) $[\pi, 2\pi]$

Answer Key

Q1	B		**Q6**	B
Q2	D		**Q7**	A
Q3	D		**Q8**	D
Q4	B		**Q9**	C
Q5	*A*			

Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Text Solution:

The domain of

$\sec^{-1} x$ is $(-\infty, -1] \cup [1, \infty)$

Video Solution:

Q2 Text Solution:

The domain of $\sin^{-1} x$ is [–1,1]

Video Solution:

Q3 Text Solution:

The principal value branch of

$\sec^{-1} x$ is $[0, \pi] \sim \left\{ \frac{\pi}{2} \right\}$.

Video Solution:

Q4 Text Solution:

The principal value branch of

$\sin^{-1} x$ is $\left[-\frac{\pi}{2}, \frac{\pi}{2} \right]$.

Video Solution:

Q5 Text Solution:

Principal value branch of

$\tan^{-1} x$ is $\left(-\frac{\pi}{2}, \frac{\pi}{2} \right)$.

Video Solution:

Q6 Text Solution:

Since the principal value branch of

$\csc^{-1} x$ is $\left[\frac{-\pi}{2}, \frac{\pi}{2} \right] - \{0\}$, therefore,

principal value of $\csc^{-1} x$ lies in interval

$\left[\frac{-\pi}{2}, \frac{\pi}{2} \right] - \{0\}$.

Video Solution:

Q7 Text Solution:

Since the principal value branch of $\cot^{-1} x$ is

$(0, \pi)$, therefore, principal value of $\cot^{-1} x$

lies in interval $(0, \pi)$.

Video Solution:

Q8 Text Solution:

As $\cos^{-1} x$ is one-one and onto function from [–1,1] to $[\pi, 2\pi]$

$\therefore [\pi, 2\pi]$ can be taken as range other than principal branch $[0, \pi]$.

Video Solution:

Q9 Text Solution:

As $\sin^{-1} x$ is one-one and onto function from [–1,1] to $\left[\frac{\pi}{2}, \frac{3\pi}{2}\right]$

$\therefore \left[\frac{\pi}{2}, \frac{3\pi}{2}\right]$ can be taken as range other than principal branch $\left[\frac{-\pi}{2}, \frac{\pi}{2}\right]$

Video Solution:

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