

INVERSE TRIGONOMETRIC FUNCTIONS

CLASS XII

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i) $\sin^{-1}\left(\frac{1}{2}\right)$	ii) $\sin^{-1}\left(\frac{-\sqrt{3}}{2}\right)$	iii) $\sec^{-1}\left(\frac{2}{\sqrt{3}}\right)$	iv) $\tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$
v) $\tan^{-1}(-\sqrt{3})$	vi) $\cos^{-1}\left(-\frac{1}{\sqrt{2}}\right)$	vii) $\sin^{-1}\left(\frac{-1}{2}\right)$	viii) $\cos^{-1}\left(\frac{-1}{2}\right)$
ix) $\tan^{-1}(-1)$	x) $\cot^{-1}(\sqrt{3})$	xi) $\operatorname{cosec}^{-1}\left(\frac{2}{\sqrt{3}}\right)$	xii) $\sec^{-1}(\sqrt{2})$

Ans: i) $\frac{\pi}{6}$ ii) $\frac{-\pi}{3}$ iii) $\frac{\pi}{6}$ iv) $\frac{\pi}{6}$
 v) $\frac{-\pi}{3}$ vi) $\frac{3\pi}{4}$ vii) $-\frac{\pi}{6}$ viii) $\frac{2\pi}{3}$
 ix) $\frac{-\pi}{4}$ x) $\frac{\pi}{6}$ xi) $\frac{\pi}{3}$ xii) $\frac{\pi}{4}$

i) $\sin^{-1}\left(\sin\frac{5\pi}{6}\right)$	ii) $\sin^{-1}\left(\sin\frac{4\pi}{3}\right)$	iii) $\sec^{-1}\left(\sec\frac{\pi}{6}\right)$	iv) $\tan^{-1}\left(\tan\frac{7\pi}{6}\right)$
v) $\tan^{-1}\left(\tan\frac{2\pi}{3}\right)$	vi) $\cos^{-1}\left(\cos\frac{5\pi}{4}\right)$	vii) $\sin^{-1}\left(\sin\frac{7\pi}{6}\right)$	viii) $\cos^{-1}\left(\cos\frac{2\pi}{3}\right)$
ix) $\tan^{-1}\left(\tan\frac{3\pi}{4}\right)$	x) $\cot^{-1}\left(\cot\frac{\pi}{6}\right)$	xi) $\operatorname{cosec}^{-1}\left(\operatorname{cosec}\frac{2\pi}{3}\right)$	xii) $\sec^{-1}\left(\sec\frac{7\pi}{4}\right)$

Ans: i) $\frac{\pi}{6}$ ii) $\frac{-\pi}{3}$ iii) $\frac{\pi}{6}$ iv) $\frac{\pi}{6}$
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 ix) $\frac{-\pi}{4}$ x) $\frac{\pi}{6}$ xi) $\frac{\pi}{3}$ xii) $\frac{\pi}{4}$

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| i. Evaluate: $\tan^{-1}\left(\tan\frac{3\pi}{4}\right)$ | Ans: $\frac{-\pi}{4}$ |
| ii. Evaluate: $\cos^{-1}\left(\cos\frac{7\pi}{6}\right)$ | Ans: $\frac{5\pi}{6}$ |
| iii. Evaluate : $\sin\left\{\frac{\pi}{3} - \sin^{-1}\left(-\frac{1}{2}\right)\right\}$ | Ans: 1 |
| iv. Find: $\tan^{-1}(1) + \sin^{-1}\left(-\frac{1}{2}\right)$ | Ans: $\frac{\pi}{12}$ |
| v. Find: $\cos^{-1}\left(\cos\frac{13\pi}{6}\right)$ | Ans: $\frac{\pi}{6}$ |
| vi. Find: $\tan^{-1}\left\{2\sin\left(2\cos^{-1}\frac{\sqrt{3}}{2}\right)\right\}$ | Ans: $\frac{\pi}{3}$ |
| vii. Find: $\tan^{-1}(\sqrt{3}) - \cot^{-1}(-\sqrt{3})$ | Ans: $\frac{-\pi}{2}$ |
| viii. Find: $\cos^{-1}\left(\cos\frac{2\pi}{3}\right) + \sin^{-1}\left(\sin\frac{2\pi}{3}\right)$ | Ans: π |
| ix. Find : $\cos\left\{\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right) + \frac{\pi}{6}\right\}$ | Ans: -1 |
| x. Find $\sin\left[\tan^{-1}(-\sqrt{3}) + \cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right]$ | Ans: 1 |
| xi. Find $\tan^{-1}\sqrt{3} - \sec^{-1}(-2)$ | Ans: $\frac{-\pi}{3}$ |
| xii. Find : $\tan^{-1}(1) + \cos^{-1}\left(-\frac{1}{2}\right)$ | Ans: $\frac{11\pi}{12}$ |