# MATHS

## BOOKS - MODERN PUBLICATION

## INVERSE TRIGONOMETRY FUNCTIONS

**Exercise**

**1.** Evaluate $\cos^{-1}\left(\dfrac{1}{2}\right) + 2\sin^{-1}\left(\dfrac{1}{2}\right)$.

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**2.** Find the value of $\tan^{-1}\sqrt{3} - \sec^{-1}(-2)$.

**3.** Write the value of $\tan\left(2\tan^{-1}\dfrac{1}{3}\right)$.

**4.** Evaluate : $\sin^{-1}\left(\sin\left(3\dfrac{\pi}{5}\right)\right)$

**5.** Fill in the blanks choosing correct answer from the brackets.

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

$\left(1, \dfrac{\pi}{4}, \dfrac{\pi}{3}\right)$

**6.** Fill in the blanks choosing correct answer from the brackets.

The principal value of $\sin^{-1}\left(\sin\dfrac{2\pi}{3}\right)$ is .... .

$\left(\dfrac{2\pi}{3}, \dfrac{\pi}{3}, \dfrac{4\pi}{3}\right)$

**7.** Fill in the blank choosing correct answer from the brackets The value of $\sin\left(\tan^{-1}x + \dfrac{\tan^{-1}\frac{1}{x}}{x}\right), x > 0$ _ _ _ . $\left(0, 1, \dfrac{1}{2}\right)$

**8.** $2\sin^{-1}\left(\dfrac{4}{5}\right) + \sin^{-1}\left(\dfrac{24}{25}\right) = $ _ _ .

**9.** Evaluate : $\tan^{-1}1 = \left(2\cos\left(\dfrac{\pi}{3}\right)\right)$.

**10.** If $\sin^{-1}\left(\dfrac{\pi}{5}\right) + \cos ec^{-1}\left(\dfrac{5}{4}\right) = \dfrac{5}{2}.$

**11.** Find two branches other than the principal value branch of $\tan^{-1}x$.

**12.** Evaluate :

$$\tan^{-1}\left(\frac{-1}{\sqrt{3}}\right) + \cot^{-1}\left(\frac{1}{\sqrt{3}}\right) + \tan^{-1}\left(\sin\left(-\frac{\pi}{2}\right)\right)$$

.

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**13.** Evaluate $\sin^{-1}\left(\cos\left(\frac{33\pi}{5}\right)\right)$.

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**14.** Express the value of the following in simplest form.

$$\tan\left(\frac{\pi}{4} + 2\cot^{-1}3\right)$$

**15.** Express the value of the following in simplest form.

$$\sin\left(\ \cos^{-1}\left(\tan\ \left(\sec^{-1}\left(\sqrt{2}\right)\right)\right)\right)$$

**16.**

$$\tan\left\{\left(\frac{1}{2}\right)\sin^{-1}\left(\frac{2x}{1+x^2}\right) + \frac{1}{2}\cos^{-1}\left(\frac{1-y^2}{1+y^2}\right)\right\}$$

.

**17.** Solve $\cos\left(2\sin^{-1}x\right) = \dfrac{1}{9}$.