

PYQSide

JEE MAIN INVERSE TRIGONOMETRIC FUNCTIONS — SUM AND DIFFERENCE FORMULAE OF INVERSE TRIGONOMETRIC FUNCTIONS — PYQS

Max. Marks: 20

Questions: 5

Section A (MCQ)

- Q.1** Let $0 < \alpha < 1$, $\beta = \frac{1}{3\alpha}$ and $\tan^{-1}(1 - \alpha) + \tan^{-1}(1 - \beta) = \frac{\pi}{4}$. Then $6(\alpha + \beta)$ is equal to :

[JEE Main 2026 (Online) 6th April Morning Shift]

- (1) 6 (2) 7 (3) 8 (4) 9

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- Q.2** Considering the principal values of inverse trigonometric functions, the value of the expression $\tan\left(2\sin^{-1}\left(\frac{2}{\sqrt{13}}\right) - 2\cos^{-1}\left(\frac{3}{\sqrt{10}}\right)\right)$ is equal to :

[JEE Main 2026 (Online) 28th January Evening Shift]

- (1) $\frac{33}{56}$ (2) $-\frac{33}{56}$ (3) $-\frac{16}{63}$ (4) $\frac{16}{63}$

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- Q.3** The sum of the infinite series $\cot^{-1}\left(\frac{7}{4}\right) + \cot^{-1}\left(\frac{19}{4}\right) + \cot^{-1}\left(\frac{39}{4}\right) + \cot^{-1}\left(\frac{67}{4}\right) + \dots$ is :

[JEE Main 2025 (Online) 4th April Evening Shift]

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

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- Q.4** $\cos\left(\sin^{-1}\frac{3}{5} + \sin^{-1}\frac{5}{13} + \sin^{-1}\frac{33}{65}\right)$ is equal to:

[JEE Main 2025 (Online) 28th January Morning Shift]

- (1) $\frac{33}{65}$ (2) 1 (3) $\frac{32}{65}$ (4) 0

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Section B (Numerical)

- Q.5** If $\frac{\pi}{4} + \sum_{p=1}^{11} \tan^{-1}\left(\frac{2^{p-1}}{1+2^{2p-1}}\right) = \alpha$, then $\tan \alpha$ is equal to _____.

[JEE Main 2026 (Online) 5th April Morning Shift]

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ANSWER KEY

Section A (MCQ)

Ques.	1	2	3	4									
Ans.	2	1	3	4									

Section B (Numerical)

Ques.	5								
Ans.	2048								