

JEE MAIN INVERSE TRIGONOMETRIC FUNCTIONS — EQUATIONS INVOLVING INVERSE TRIGONOMETRIC FUNCTIONS — PYQS

Max. Marks: 24

Questions: 6

Section A (MCQ) — 3 questions

Q.1 The number of solutions of $\tan^{-1} 4x + \tan^{-1} 6x = \frac{\pi}{6}$,

where $-\frac{1}{2\sqrt{6}} < x < \frac{1}{2\sqrt{6}}$, is equal to :

[JEE Main 2026 (Online) 22nd January Morning Shift]

- (1) 2 (2) 0 (3) 3 (4) 1

 Scan or tap for the
full solution


Q.2 Let $x = \frac{m}{n}$ (m, n are co-prime natural numbers) be a solution of the equation $\cos(2\sin^{-1} x) = \frac{1}{9}$ and let α, β ($\alpha > \beta$) be the roots of the equation $mx^2 - nx - m + n = 0$. Then the point (α, β) lies on the line

[JEE Main 2024 (Online) 29th January Evening Shift]

- (1) $3x - 2y = -2$ (2) $3x + 2y = 2$
(3) $5x + 8y = 9$ (4) $5x - 8y = -9$

 Scan or tap for the
full solution


Q.3 Considering only the principal values of inverse trigonometric functions, the number of positive real values of x satisfying $\tan^{-1}(x) + \tan^{-1}(2x) = \frac{\pi}{4}$ is :

[JEE Main 2024 (Online) 27th January Evening Shift]

- (1) more than 2 (2) 2
(3) 0 (4) 1

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Section B (Numerical) — 3 questions

Q.4 If $k = \tan\left(\frac{\pi}{4} + \frac{1}{2}\cos^{-1}\left(\frac{2}{3}\right)\right) + \tan\left(\frac{1}{2}\sin^{-1}\left(\frac{2}{3}\right)\right)$, then the number of solutions of the equation $\sin^{-1}(kx - 1) = \sin^{-1} x - \cos^{-1} x$ is _____.

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

 Scan or tap for the
full solution


Q.5 Let $S = \{x : \cos^{-1} x = \pi + \sin^{-1} x + \sin^{-1}(2x + 1)\}$.

Then $\sum_{x \in S} (2x - 1)^2$ is equal to _____.

[JEE Main 2025 (Online) 29th January Morning Shift]

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full solution


Q.6 Let the inverse trigonometric functions take principal values. The number of real solutions of the equation $2\sin^{-1} x + 3\cos^{-1} x = \frac{2\pi}{5}$, is _____.

[JEE Main 2024 (Online) 9th April Evening Shift]

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full solution


ANSWER KEY

Section A (MCQ) — 3 questions

Ques.	1	2	3								
Ans.	4	3	4								

Section B (Numerical) — 3 questions

Ques.	4	5	6								
Ans.	1	5	0								