

PYQSide

JEE MAIN TRIGONOMETRIC FUNCTIONS — MAXIMUM AND MINIMUM VALUES OF TRIGONOMETRIC EXPRESSIONS — PYQS

Max. Marks: 16

Questions: 4

Section A (MCQ)

- Q.1** The sum of all the integral values of p such that the equation $3\sin^2 x + 12\cos x - 3 = p$, $x \in \mathbb{R}$, has at least one solution, is:

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

- (1) -54 (2) -60 (3) -75 (4) -84

Scan or tap for the full solution



- Q.2** Let $P = \{\theta \in [0, 4\pi] : \tan^2 \theta \neq 1\}$ and $S = \{a \in \mathbb{Z} : 2(\cos^8 \theta - \sin^8 \theta) \sec 2\theta = a^2, \theta \in P\}$. Then $n(S)$ is:

[JEE Main 2026 (Online) 2nd April Evening Shift]

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

Scan or tap for the full solution



- Q.3** Let α and β respectively be the maximum and the minimum values of the function

$$f(\theta) = 4\left(\sin^4\left(\frac{7\pi}{2} - \theta\right) + \sin^4(11\pi + \theta)\right) - 2\left(\sin^6\left(\frac{3\pi}{2} - \theta\right) + \sin^6(9\pi - \theta)\right), \theta \in \mathbb{R}.$$

Then $\alpha + 2\beta$ is equal to :

[JEE Main 2026 (Online) 23rd January Morning Shift]

- (1) 6 (2) 5 (3) 4 (4) 3

Scan or tap for the full solution



- Q.4** The least value of $(\cos^2 \theta - 6\sin \theta \cos \theta + 3\sin^2 \theta + 2)$ is

[JEE Main 2026 (Online) 23rd January Evening Shift]

- (1) $4 - \sqrt{10}$ (2) -1
(3) $4 + \sqrt{10}$ (4) 1

Scan or tap for the full solution



ANSWER KEY

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