

JEE MAIN CONIC SECTIONS — ELLIPSE: TANGENT AND NORMAL (JEE) — PYQS

Max. Marks: 16
Questions: 4

Section A (MCQ) — 3 questions

- Q.1** If the line $\alpha x + 4y = \sqrt{7}$, where $\alpha \in \mathbb{R}$, touches the ellipse $3x^2 + 4y^2 = 1$ at the point P in the first quadrant, then one of the focal distances of P is :

[JEE Main 2026 (Online) 21st January Evening Shift]

- (1) $\frac{1}{\sqrt{3}} - \frac{1}{2\sqrt{11}}$ (2) $\frac{1}{\sqrt{3}} - \frac{1}{2\sqrt{5}}$
 (3) $\frac{1}{\sqrt{3}} + \frac{1}{2\sqrt{5}}$ (4) $\frac{1}{\sqrt{3}} + \frac{1}{2\sqrt{7}}$

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- Q.2** Let for two distinct values of p the lines $y = x + p$ touch the ellipse $E: \frac{x^2}{4^2} + \frac{y^2}{3^2} = 1$ at the points A and B. Let the line $y = x$ intersect E at the points C and D. Then the area of the quadrilateral ABCD is equal to :

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

- (1) 48 (2) 20 (3) 24 (4) 36

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- Q.3** If the midpoint of a chord of the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$ is $(\sqrt{2}, 4/3)$, and the length of the chord is $\frac{2\sqrt{\alpha}}{3}$, then α is:

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

- (1) 26 (2) 18 (3) 22 (4) 20

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Section B (Numerical) — 1 question

- Q.4** Let C be the circle $x^2 + (y - 1)^2 = 2$, E_1 and E_2 be two ellipses whose centres lie at the origin and major axes lie on x-axis and y-axis respectively. Let the straight line $x + y = 3$ touch the curves C, E_1 and E_2 at $P(x_1, y_1)$, $Q(x_2, y_2)$ and $R(x_3, y_3)$ respectively. Given that P is the mid point of the line segment QR and $PQ = \frac{2\sqrt{2}}{3}$, the value of $9(x_1y_1 + x_2y_2 + x_3y_3)$ is equal to _____.

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

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ANSWER KEY

Section A (MCQ) — 3 questions

Ques.	1	2	3								
Ans.	4	3	3								

Section B (Numerical) — 1 question

Ques.	4										
Ans.	46										