



MATHS

BOOKS - JEE MAINS PREVIOUS YEAR

ELLIPSE



1. A focus of an ellipse is at the origin. The directrix is the line x = 4 and the eccentricity

is 1/2. Then the length of the semimajor axis is

(1)
$$\frac{8}{3}$$
 (2) $\frac{2}{3}$ (3) $\frac{4}{3}$ (4) $\frac{5}{3}$

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2. The ellipse $x^2 + 4y^2 = 4$ is inscribed in a rectangle aligned with the coordinate axes, which in turn is inscribed in another ellipse that passes through the point (4, 0). Then the equation of the ellipse is (1) $x^2 + 16y^2 = 16$ (2) $x^2 + 12y^2 = 16$ (3) $4x^2 + 48y^2 = 48$ (4) $4x^2 + 64y^2 = 48$



3. An ellipse is drawn by taking a diameter of the circle $\left(x
ight)^{2}+y^{2}=1$ as its semiminor axis and a diameter of the circle $x^2 + \left(y2
ight)^2 = 4$ as its semi-major axis. If the centre of the ellipse is the origin and its axes are the coordinate axes, then the equation of the ellipse is (1) $4x^2 + y^2 = 4$ (2) $x^2 + 4y^2 = 8$ (3) $4x^2 + y^2 = 8$ (4) $x^2 + 4y^2 = 16$

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4. The equation of the circle passing through the foci of the ellipse $rac{x^2}{16}+rac{y^2}{9}=1$, and having centre at (0, 3) is (1) $x^2 + y^2 - 6y + 7 = 0$ (2) $x^2 + y^2 - 6y - 5 = 0$ (3) $x^2 + y^2 - 6y + 5 = 0$ (4) $x^2 + y^2 - 6y - 7 = 0$

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5. The area (in sq. units) of the quadrilateral formed by the tangents at the end points of the latera recta to the ellipse $\frac{x^2}{9} + \frac{y^2}{5} = 1$, is: (1) $\frac{27}{4}$ (2) 18 (3) $\frac{27}{2}$ (4) 27

A. 27/4

B. 18

C. 27/2

D. 27

Answer: null



6. The eccentricity of an ellipse whose centre is at the origin is $\frac{1}{2}$. if one of its directrices is x = -4, then the equation of the normal to it at $\left(1, \frac{3}{2}\right)$ is: 4x + 2y = 7 (2) x + 2y = 4(3) 2y - x = 2 (4) 4x - 2y = 1

A. 4x + 2y = 7

B. x + 2y = 4

C.2y - x = 2

D. 4x - 2y = 1

Answer: null

