

JEE MAIN DIFFERENTIAL EQUATIONS — HOMOGENEOUS DIFFERENTIAL EQUATIONS — PYQS

Max. Marks: 12
Questions: 3

Section A (MCQ) — 2 questions

Q.1 Let $x = x(y)$ be the solution of the differential equation $2y^2 \frac{dx}{dy} - 2xy + x^2 = 0$, $y > 1$, $x(e) = e$.

Then $x(e^2)$ is equal to:

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

- (1) $\frac{3}{2}e^2$ (2) $\frac{2}{3}e^2$ (3) e^2 (4) $2e^2$

Scan or tap for the
full solution



Q.2 Let the solution curve of the differential equation $x dy - y dx = \sqrt{x^2 + y^2} dx$, $x > 0$, $y(1) = 0$, be $y = y(x)$. Then $y(3)$ is equal to

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

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

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full solution



Section B (Numerical) — 1 question

Q.3 Let $y = y(x)$ be the solution of the differential equation $x \sin\left(\frac{y}{x}\right) dy = \left(y \sin\left(\frac{y}{x}\right) - x\right) dx$, $y(1) = \frac{\pi}{2}$ and let $\alpha = \cos\left(\frac{y(e^{12})}{e^{12}}\right)$. Then the number of integral values of p , for which the equation $x^2 + y^2 - 2px + 2py + \alpha + 2 = 0$ represents a circle of radius $r \leq 6$, is _____.

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

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ANSWER KEY

Section A (MCQ) — 2 questions

Ques.	1	2								
Ans.	2	2								

Section B (Numerical) — 1 question

Ques.	3									
Ans.	11									