

**JEE MAIN CONTINUITY AND DIFFERENTIABILITY —
DIFFERENTIABILITY AND ITS RELATION WITH CONTINUITY — PYQS**

Max. Marks: 20

Questions: 5

Section A (MCQ) — 1 question

Q.1 Let $\alpha, \beta \in \mathbb{R}$ be such that the function $f(x) = \begin{cases} 2\alpha(x^2 - 2) + 2\beta x, & \text{if } x \leq 1 \\ (\alpha + 3)x + (\alpha - \beta), & \text{if } x > 1 \end{cases}$ be differentiable at all $x \in \mathbb{R}$. Then $34(\alpha + \beta)$ is equal to

[JEE Main 2026 (Online) 24th January Morning Shift]

- (1) 48 (2) 84 (3) 36 (4) 24

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Section B (Numerical) — 4 questions

Q.2 The number of points, at which the function $f(x) = \max \{6x, 2 + 3x^2\} + |x - 1| \cos \left| x^2 - \frac{1}{4} \right|$, $x \in (-\pi, \pi)$, is not differentiable, is _____.

[JEE Main 2026 (Online) 4th April Morning Shift]

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Q.3 Let $f(x) = \begin{cases} x-1, & x < 0 \\ x^2-5x+6, & x \geq 0 \end{cases}$ and $g(x) = f(|x|) + |f(x)|$. If the number of points where g is not continuous and is not differentiable are α and β respectively, then $\alpha + \beta$ is equal to _____.

[JEE Main 2026 (Online) 4th April Evening Shift]

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Q.4 Let m and n be the number of points at which the function $f(x) = \max \{x, x^3, x^5, \dots, x^{21}\}$, $x \in \mathbb{R}$, is not differentiable and not continuous, respectively. Then $m + n$ is equal to _____.

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

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Q.5 Let $f(x) = \begin{cases} 3x, & x < 0 \\ \min\{1 + [x], 2[x]\}, & 0 \leq x \leq 2 \\ 5, & x > 2 \end{cases}$ where $[.]$ denotes greatest integer function. If α and β are the number of points, where f is not continuous and is not differentiable, respectively, then $\alpha + \beta$ equals _____.

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

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ANSWER KEY

Section A (MCQ) — 1 question

[illegible]

Section B (Numerical) — 4 questions

Ques.	2	3	4	5						
Ans.	3	4	3	5						