



MATHS

BOOKS - JEE MAINS PREVIOUS YEAR

ENGLISH

LIMITS AND DERIVATIVES

Others

1. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be a positive increasing function with $\lim_{x \rightarrow \infty} \frac{f(3x)}{f(x)} = 1$. Then

$$\lim_{x \rightarrow \infty} \frac{f(2x)}{f(x)} = (1) \frac{2}{3} (2) \frac{3}{2} (3) 3 (4) 1$$



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2. Let $f: (-1, 1) \rightarrow \mathbb{R}$ be a differentiable function with $f(0) = -1$ and $f'(0) = 1$

. Let $g(x) = [f(2f(x) + 2)]^2$. Then $g'(0) =$

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



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3. $\frac{d^2x}{dy^2}$ equals:

(1.) $\left(\frac{d^2y}{dx^2}\right)^{-1}$

(2) $-\left(\frac{d^2y}{dx^2}\right)\left(\frac{dy}{dx}\right)^{-3}$

(3) $-\left(\frac{d^2y}{dx^2}\right)^{-1}\left(\frac{dy}{dx}\right)^{-2}$

(4) $-\left(\frac{d^2y}{dx^2}\right)^{-1}\left(\frac{dy}{dx}\right)^3$



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4. The number of values of k for which the

linear equations $4x + ky + 2z = 0$

$kx + 4y + z = 0$ $2x + 2y + z = 0$ possesses a non-zero solution is : (1) 3 (2) 2 (3) 1 (4) zero



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5. $\left(\lim \right)_{x \rightarrow 0} \left((1 - \cos 2x) \frac{3 + \cos x}{x \tan 4x} \right)$ is equal to (1) $\frac{1}{2}$ (2) 1 (3) 2 (4) $-\frac{1}{4}$



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6. Let $p = \left(\lim \right)_{x \rightarrow 0^+} \left(1 + \tan^2 \sqrt{x} \right)^{1/2x}$ then $\log p$ is equal to: (1) 2 (2) 1 (3) $\frac{1}{2}$ (4) $\frac{1}{4}$



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7. $\lim_{x \rightarrow \frac{\pi}{2}} \frac{\cot x - \cos x}{(\pi - 2x)^3}$ equals: (1) $\frac{1}{8}$ (2) $\frac{1}{4}$ (3) $\frac{1}{24}$ (4) $\frac{1}{16}$



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