Derivative - Class XII

Past Year JEE Questions

Questions

Quetion: 01

Let $f:(-1,1) \to R$ be a differentiable function with $f(0) = -1$ and $f'(0) = 1$. Let $g(x) = [f(2f(x) + 2)]^2$. Then $g'(0) =$

A. -4

B. 0

C. -2

D. 4

Solutions

Solution: 01

Explanation

$g'(x) = 2(f(2f(x) + 2))$

$\left(\frac{d}{dx}(f(2f(x) + 2))\right)$

$= 2f(2f(x) + 2) f'(2f(x))$

$+ 2) . \left(2f'(x)\right)$

$\Rightarrow g'(0) = 2f(2f(0) + 2) .$

$f'(2f(0) + 2) .2f'(0)$

$= 4f(0) \left(f'(0)\right)^2$

$= 4(-1)(1)^2 = -4$