

Topic : Method of Differentiation

Type of Questions

M.M., Min.

Subjective Questions (no negative marking) Q.1,2,3,4,5,6,7,8,9,10 (4 marks, 5 min.)

[40, 50]

1. Find the derivative of x^2 from first principle.
2. Find the derivative of $\sqrt{\tan x}$ from first principle.
3. Find the derivative of $\cos(3x + 2)$ from first principle.
4. If $g(t) = 1 - t^2$ then find $g'(1)$
5. For the function, given by $f(x) = x^2 - 6x + 8$, prove that $f'(5) - 3f'(2) = f'(8)$
6. If $y = x^3 \tan x$ then find $\frac{dy}{dx}$
7. Find the derivative of $5\sin x - 11\cos x + \frac{1}{x^2}$ w.r. to x
8. If $y = x \sin x$ then prove that $\frac{1}{y} \cdot \frac{dy}{dx} - \frac{1}{x} = \cot x$
9. If $y = \frac{\sin x + \cos x}{\sin x - \cos x}$ then find $\frac{dy}{dx}$
10. If $f(x) = \frac{x}{1 + \tan x}$ then find $f'(0)$

Answers Key

1. $f'(x) = 2x$ 2. $\frac{\sec^2 x}{2\sqrt{\tan x}}$ 3. $-3\sin(3x + 2)$
4. -8 6. $x^3\sec^2x + 3x^2\tan x$
7. $5\cos x + 11\sin x - \frac{2}{x^3}$ 9. $\frac{2}{\sin 2x - 1}$ 10. 1

