

## PART-A

1. Find  $\lim_{(x \rightarrow 0)} \tan(4x)/x$ .
2. Find  $\lim_{(x \rightarrow 2)} (x^2 + 5x + 6)/(2x^2 - 3x)$ .
3. Differentiate  $y = 5x^3 + 2x^2 + 9x + 2025$  with respect to  $x$ .
4. Find  $dy/dx$  if  $y = \sin(5x)$ .

## PART-B

5(a). Evaluate  $\lim_{(x \rightarrow \infty)} (x^3 - 8)/(2x^3 + 1)$ .

----- OR -----

5(b). Evaluate  $\lim_{(x \rightarrow 0)} \tan(121x)/\tan(11x)$ .

6(a). Differentiate  $(x^2 + x)/x^5$  with respect to  $x$ .

----- OR -----

6(b). Differentiate  $\log(\sin^2 x)$  with respect to  $x$ .

## PART-C

7(a). Evaluate  $\lim_{(x \rightarrow 0)} (\sqrt{5 + x} - \sqrt{5 - x})/x$ .

----- OR -----

7(b). Evaluate  $\lim_{(x \rightarrow 2)} (2x^2 - x - 6)/(x^3 - 2x^2 + x - 2)$ .

8(a). Differentiate  $(1 + \sin x)/(1 + \cos x)$  with respect to  $x$ .

----- OR -----

8(b). Find the derivative of  $y = \cos 2x$  by using First principle of Derivatives.