

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.