

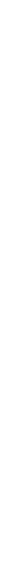
Q1. Find $\left. \frac{dy}{dx} \right|_{x=1}$ if $y = 3^{\log_2 x} + \log_2 3^x$

Q2. The position of a particle is given by $S(t) = 2t^3 - 9t^2 + 12t$ (t in sec. and S in meters). Find the total distance travelled during the first 3 seconds.

Q3. Evaluate $y'(\pi)$ if $y = x^{\cos x} + \frac{1}{\pi^2}$

Q1. Find $\lim_{x \rightarrow 1} \frac{\ln(x^2 + e^x - 1) - 1}{x - 1}$

Q2. Suppose that x is increasing at a rate of 2 cm/min and y is decreasing at a rate of 5 cm/min. If $\frac{1}{z} = \frac{1}{x} + \frac{1}{y}$, find the rate of change of z when $x = 2$ cm and $y = 1$ cm.



Q3. Find $y'(1)$ if $y = (4 + \ln x)^{\sin(x-1)}$

