Q. No. 1: The height (in meters) of a projectile shot vertically upward from a point 2 m above ground level with an initial velocity of 24.5 m/sec is \( h = 2 + 24.5t - 4.9t^2 \) after seconds.

(a) Find the velocity after 4 s.

(b) When does the projectile reach its maximum height?

(c) What is the maximum height?

(d) When does it hit the ground?
Q.No.2:- The position of a particle is given by the equation \( s(t) = -t^3 + 9t^2 - 24t + 5 \), where \( s \) is measured in meters and \( t \) in seconds. Then total distance traveled by the particle during the first five seconds is:
Q.No.3:- Suppose that \(x\) and \(y\) are differentiable functions of \(t\) and are related by the equation \(x^2y^3 = \frac{4}{27}\). If \(\frac{dy}{dx} = \frac{1}{2}\), then the value of \(\frac{dx}{dt}\) at \(x = 2\) is
Q.No.4:- Sand falls from a conveyor belt at a rate of $10 \, m^3/min$ on to the top of Conical pile. The height of the pile is always three-eights of the base diameter. How fast is the height changing when the pile is 4$m$ high.