Department of Mathematics and Statistics KFUPM
MATH 101-08 Quiz#5, Time: 50 mins

Student's Name: _____ ID: _____Section No: _____

Class Time: _____ Instructor's Name: _____

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 $4m$ high.