

Math 124 Quiz 4 Winter 2002

Name:

Problem 1. (5 points) Suppose the equation of motion of a point on a spring is given by

$$s(t) = 2e^{-1.5t} \sin 2\pi t$$

where s is measured in centimeters and t in seconds. Find an expression for the velocity of the spring at time t .

Problem 2. (10 points) An object falls vertically down from the top of an 80 meter high pole and its height y above the ground after t seconds is given by $y = 80 - 4.9t^2$. Suppose this falling object is viewed by a person standing on the ground at a distance of 10 meters from the pole and his eye level is at a height of 2 meters from the ground.

(a) Draw a labeled picture that illustrates this problem. Mark your axes clearly.

(b) Calculate the rate of change of the distance from the person's eye to the object as a function of t . (Remember the units and you don't need to simplify your answer.)