Quiz #11
MATH 151 Section _______ Name: _______________________

October 11, 2002

This is due at the start of class on Thursday.

1. A metal rod has the shape of a right circular cylinder. As it is being heated, its length is increasing at a rate of 0.005 cm/min and its diameter is increasing at 0.002 cm/min. At what rate is the volume changing when the rod has length 40 cm and diameter 3 cm?

2. A person flying a kite holds the string 5 ft above the ground level, and the string is released at a rate of 2 ft/sec as the kite moves horizontally at an altitude of 105 ft (see figure). Assuming there is no sag in the string, find the rate at which the kite is moving when 125 ft of string has been released.

3. Water is leaking out of an inverted conical tank at a rate of 0.01 m$^3$/min. The tank has height of 8 m and the diameter at the top is 6 m. Find the rate of change of the radius (located at the water level of the tank) when the height of the tank is 3 m. $V = \frac{1}{3} \pi r^2 h$