Your Name:

Duration of the Quiz is 20 minutes. There are three problems, worth 20 points. Show all your work for full credit. Books, notes etc. are prohibited. Calculators are NOT permitted.

1. If a ball is thrown vertically upward with a velocity of 80 ft/s, then its height after t seconds is $s = 80t - 16t^2$.

    (a) What is the maximum height reached by the ball? You must compute the exact value.

    (b) What is the velocity of the ball when it is 96 ft above the ground on its way up? On its way down?

2. The cost function for a certain commodity is

$$C(x) = 84 + 0.16x - 0.0006x^2 + 0.00001x^3$$

Find and interpret $C'(100)$.

3. Find an equation of the tangent line to the curve at the given point.

$$y = \frac{\sin t}{1 + \cos t}, \quad t = \frac{\pi}{3}$$