9/27/2000 MA303 Calculus I Name:_____
Dr. Lunsford Quiz 6 (20 Points Total)

I. Find the indicated derivatives. Do not simplify your answers. (4 points each – 12 total)

(a) $f(x) = \sqrt[3]{x^4} - 2\cos x$

$f'(x) =$

(b) $y = 3 - \dfrac{3}{6t}$

$\dfrac{dy}{dt} =$

(c) $f(x) = \dfrac{x^3 - 3x^2 + 4}{x^2}$

$\dfrac{d}{dx} f(x) =$

II. The height (in feet) of a ball dropped from a building 100 feet tall is given by the function $h(t) = -16t^2 + 100$ where t is measured in seconds.

(a) How fast is the ball moving 1 second after being dropped? Draw the line whose slope represents this velocity on the graph below. (3 points)

(b) What is the impact velocity of the ball, i.e. how fast is the ball moving the instant it hits the ground? (5 points)