Name: _____ Math 211 Quiz 5

Section: 302 □ 303 □ Feb 22, 2012

Calculators are not allowed in this quiz.

1. Compute the derivative of the given function.

a. $f(t) = (t^3 - 1)(t - \frac{1}{t})$ **b**. $g(x) = \frac{x^2 + 1}{x + 1}$

2. Use the chain rule to compute the derivative $\frac{dy}{dx}$ and simplify the answer.

a. $y = \sqrt{u}; u = x^2 + 2x - 3$ **b**. $y = \frac{1}{u^2}; u = x^2 + 1$ **c**. $y = u^2 + u - 2; u = \frac{1}{x}$

3. Differentiate the given function and simplify your answer.

$$\textbf{a}.\ f(x) = (x^2+1)^4 \qquad \textbf{b}.\ g(t) = \sqrt{t^2+1}$$

Bonus problem. The gross annual earnings of a certain company are $f(t) = \sqrt{10t^2+t+229}$ thousand dollars t years after its formation in January 2005.
a. At what rate will the gross annual earnings of the company be growing in January 2010?
b. At what percentage rate will the gross annual earnings be growing in January 2010?