

Quiz 6A, Business Calculus

Fall 2012

Name: _____

Key

1. (4 points) Find the derivative of

$$f(x) = \ln \left(\frac{(x-6)^7}{3x^2+5} \right)$$

Simplify your answer.

$$f(x) = \ln(x-6)^7 - \ln(3x^2+5)$$

$$f(x) = 7 \ln(x-6) - \ln(3x^2+5)$$

$$f'(x) = \frac{7}{x-6} - \frac{6x}{3x^2+5}$$

2. (3 points) The price of Angry Bird stuffed animals is given by $p(t) = 6 + 4e^{-2t}$, where p is measured in dollars and t in months.

(a) At what rate is the price changing after 3 months?

$$\checkmark \checkmark p'(t) = 4e^{-2t}(-2) = -8e^{-2t}$$

$$\checkmark p'(3) = -8e^{-2(3)} = -8e^{-6} = -0.0198?$$

3. (3 points) Evaluate the indefinite integral (i.e. find the antiderivative): $\int (7 + \frac{x^2}{x^4} + e^x) dx$.

$$\int (7 + x^{-2} + e^x) dx$$

$$= 7x + (\frac{1}{-1})x^{-1} + e^x + C$$

$$= \boxed{7x - x^{-1} + e^x + C}$$

$\frac{1}{2} \quad 1.5 \quad \frac{1}{2} \quad \frac{1}{2}$