

Quiz 2
Econ 407

You must show your work.

Name _____

1. Calculate $\frac{dy}{dx}$.

(a) $f(x) = x^2 + 5x^3 + 5$

(b) $f(x) = e^{5x}$

(c) $f(x) = \frac{4x+2}{8x^2+3x^3}$

(d) $f(x) = (3 + 5x^3)(2x + x^2)$

(e) $f(x) = (3x^2 + 4x)^3$

2. From the definition of the derivative, find the derivative of $f(x) = 3x^2$.

3. Consider the following system of equations:

$$\begin{aligned}2x_1 - x_3 &= 15 \\x_1 - 3x_2 + 2x_3 &= -5 \\6x_1 + 5x_2 + x_3 &= 28\end{aligned}$$

Solve for x_2 using Cramer's Rule.

4. Consider $Y = AK^\alpha$. Give an economic interpretation of the derivative of this function. Do you expect α to be positive or negative and why?