

QUIZ 8 - MATH 112

Friday, April 4

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Compute the derivative

$$\left(\frac{\ln(x^2 + 1)}{x} \right)' =$$

2. [4 points] Find an equation for the tangent line to the graph of

$$f(x) = x^3 e^{2x}$$

at $x = 1$.

3. [4 points] Consider the function

$$f(x) = x e^{-x}.$$

- (a) Compute the first derivative and find the critical points.

(**Hint:** An exponential function has no zeros.)

- (b) Construct the sign table for the first derivative and draw conclusions about f .