

Math 1300
Fall 2025
Quiz 9

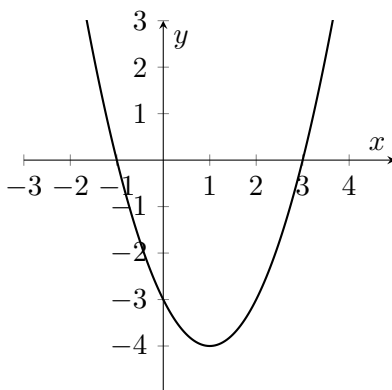
Name: _____

1. (2 points) Where does the absolute maximum of the function

$$g(x) = \ln(x^2 + 1)$$

occur on the interval $[-1, 2]$?

- (a) $x = -1$
 - (b) $x = 0$
 - (c) $x = 1$
 - (d) $x = 2$
 - (e) Does not exist
2. (2 points) Suppose f is a function which is continuous and differentiable on the interval $[-2, 2]$. Which of the following conditions would guarantee that $f'(c) = 0$ for some c between -2 and 2 ?
- (a) f is a parabola.
 - (b) f has a change in concavity.
 - (c) $f(-2) = f(2)$.
 - (d) f has no horizontal tangent lines.
 - (e) f is decreasing.
3. (2 points) The following is a graph of $f(x) = x^2 - 2x - 3$.



On the interval $[0, 3]$, for which value of x does the conclusion of the Mean Value Theorem hold?

- (a) 0
- (b) $1/2$
- (c) 1
- (d) $3/2$
- (e) 2

4. (4 points) Let $f(x) = \sqrt{4-x}$.

(a) Use the linearization of $f(x)$ at $a = 0$ to estimate $\sqrt{3.95}$.

(b) Is your estimate from part (a) an overestimate or an underestimate? Justify your answer.