

Math 108-01  
Summer 2025  
Dr. Lily Yen

Quiz 4  
Show all your work

Name: \_\_\_\_\_  
Number: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Score: \_\_\_\_/10

**Problem 1:** Answer the following using derivative rules. Do NOT simplify.

a. Find  $g'(x)$  where  $g(x) = \sin^2(x + 3) \left( e^{x^3-x} + \tan^{-1}(\ln(x)) \right)$

Score:      /3

b. Find  $d(f(x))/dx$  where

$$f(x) = \frac{5^x + \sec(x + \sqrt{x})}{\log(x^3 + \cos(x))}$$

Score:      /3

**Problem 2:** Use implicit differentiation to determine  $dy/dx$  for  $y^2 + 2y + 2x^2 - 2xy = 27$ . Also, find an equation of the tangent line at a point on the curve where  $x = 1$ . One equation is enough.

Score:      /4