

Mth 251, Section 002: Quiz # 5: Due on Thursday 05/21, in class

PRINT your name:

Problem 1. (10 points) Given the function $f(x) = \frac{\sin x}{1 + \cos x}$

a) (5 points) Find the derivative $f'(x)$.

b) (5 points) Find the equation of the tangent line to the graph of f at $x = \frac{\pi}{2}$.

Problem 2. (10 points) Evaluate each of the following derivatives

a) (5 points) $y = x^2 \cos(3x)$, $y' =$

b) (5 points) $y = \frac{(\sin x)^2}{1 + \cos(3x)}$, $y' \left(\frac{\pi}{2} \right) =$

Problem 3. (10 points) Let $g(x)$ denote the inverse of the function $f(x) = \frac{x^3}{x^2 + 1}$

Evaluate the derivative $g'(\frac{1}{2})$

Problem 4. (10 points) Given the function $f(x) = \ln\left(\frac{x+1}{x^3+1}\right)$

a) (5 points) Find the derivative $f'(x)$.

b) (5 points) Find the equation of the tangent line to the graph of f at $x = 1$.