

Mth 251, Section 002: Quiz # 4: Due on Thursday 05/14, in class

PRINT your name:

Problem 1. (10 points) Given the function

$$f(x) = e^x(x^2 + 1)(x + 4)$$

- use the product rule to find the expression of the derivative function $f'(x)$
- what is the value of $f'(1)$?

Problem 2. (10 points) Given the function

$$f(x) = \frac{x^2 - 1}{(2x + 1)(x^2 + 1)}$$

- evaluate $f'(1)$
- find the equation of the tangent line at $x = 1$

Problem 3. (10 points) A ball is tossed up vertically from the ground level and returns to earth 4 seconds later.

a) (5 points) What was the initial velocity of the ball?

b) (5 points) How high did it go?

Hint: The equation of vertical motion is $h(t) = -\frac{1}{2}gt^2 + v_0t + h_0$

Problem 4. (10 points) Given the function

$$g(x) = \frac{x^2 + 1}{x + 1}$$

find the second order derivative at $x = 1$, $g''(1) = ?$