Name ______________________________

• No calculators allowed.
• Show sufficient work to justify each answer.
• You have 15 minutes for this quiz.

1. (2 pts each) Find \( \frac{df}{dx} \).
   
   (a) \( f(x) = (x^5 + x + 1)(x^{10} + 2x^3 + 4) \)

   (b) \( f(x) = \frac{1}{x} + x^2 e^x \)
2. (3pts) Let \( f(w) = \frac{w^3+w+1}{(w-1)^2} \). Find the equation of the tangent line to the curve \( y = f(w) \) at the point \((0, 1)\).

3. (3pts) Let \( f(x) = 100x^{13}e^{x+1} \). Find \( f'(x) \) and \( f''(x) \)