Problem 1: Find the derivative of \( f(x) = e^{2x} + 3(x^2 + 1) + \log_3 \sqrt{x + 1} \).

Problem 2: Find the slope of the line tangent to the graph of \( y = \frac{x(x^2 + 1)^3}{(x^3 + 1)^2} \).

Problem 3: Find \( y^{(5)} \) if \( y = (x + 1)^4 - e^{2x} \).

Problem 4: Find \( y' \) at the point \((2, 1)\) if \( 2xy + y^2 = 5 \).