10360 Differentiation Quiz - 35 mins - No Calculators Allowed.

1. Find the derivative of the following functions

1a. $y = \sec^3(2x)$

1b. $f(x) = \sin^2(x) \cos(3x)$

1c. $g(x) = \frac{e^x - 1}{e^{2x} + 5}$
2. Find the slope function of \( y = (1 + x^2)^{2x} \).

3. The graphs of the function \( f(x) \) and its tangent line at \( x = 2 \) are given below. Find the derivative of the function \( Q(x) = \frac{f(x)}{x + 1} \) at \( x = 2 \).
4. Consider the curve given by

\[ x^2 e^y - 2y^2 x + 5x^3 = 6. \]

Find \( \frac{dy}{dx} \).