1. (3 points) Compute the first derivative $f'(x)$ for the given function.

$$f(x) = \arctan \left( \sin^3 \left( 7xe^{2x} \right) + 5e^{3x} \right)$$
2. (2 points) Compute the second derivative $g''(t)$ for the given function.

$$g(t) = \ln (\sin t + e^{4t})$$
3. (3 points) Find the equation of the line tangent to the curve at the point \((x, y) = (-1, 1)\).

\[ x^4y^3 + 3x + 2 = y^2 - 1 \]
4. (2 points) Compute \( \frac{dy}{dx} \) for the given function. Write your answer completely in terms of \( x \).

\[
y = \left( \cos(x^3) + 4 \right)^{4x^3}
\]