1.) (25 points) Use the chain rule to find the derivative.

\[ f(x) = \cos((\sin(x^2 - 7x + 9))^{-2}). \]

2.) (25 points) Prove that \( f(x) = 3|x - 2| - 1 \) is not differentiable at \( x=2 \).

3.) (25 points) By using only the definition of derivative, find the derivative of \( f(x) = \frac{x^2 + 1}{x} \).

4.) (25 points) Find the equation of the tangent line to the graph of \( f \) at the given point.

\( f(x) = (\frac{x-5}{x-3x-1})^2 \cos(3x) + 1 \) \( (0, f(0)) \)