Problem 1. Suppose $f'(x) = 4 \sec(x) \tan(x) - 2e^x + 7$ and $f(0) = 5$. Find $f(x)$.

Problem 2. Prove or disprove that $F(x) = \arctan(\sin^2(5x)) + C$ is the general antiderivative of $f(x) = \frac{2 \sin(5x) \cos(5x)}{1 + \sin^4(5x)}$. 