Math 1190 Quiz #9

**Problem 1:** Find the maximum value of the function \( f(x, y, z) = 2x + 6y + 10z \) given that \( x^2 + y^2 + z^2 = 35 \).

**Problem 2:** For \( x > 0 \), find the minimum value of the expression
\[
\frac{(x + 1/x)^6 - (x^6 + 1/x^6) - 2}{(x + 1/x)^3 + (x^3 + 1/x^3)}.
\]

**Problem 3:** Find all real-valued functions \( f \) on the real line such that for all \( x \)
\[
[f(x)]^2 = \int_0^x \{[f(t)]^2 + [f'(t)]^2\} \, dt + 2009.
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