1. Evaluate, but do not simplify. \( \frac{d}{dx} \left[ (3x^2 + 1) \cos(e^x) \right] \)

2. Evaluate, but do not simplify. \( \frac{d}{dx} \left[ \frac{4 \ln(x) + \tan(x)}{xe^x} \right] \)

3. Evaluate \( \int \frac{1}{\sqrt{x}} \sin(4\sqrt{x}) \, dx \)
Point Assignment out of 5 (Choose best)

**Problem 1**

1. Identify Product
2. Identify Power rule for \((x^2 + 1)\)
3. Identify Chain rule for \(\cos(e^x)\)
4. Chain Rule Applied Correctly
5. Correct Derivative

**Problem 2**

1. Identify Quotient
2. Apply Quotient Rule correctly
3. Identify denominator as product
4. Apply product rule
5. Correct Derivative

**Problem 3**

1. Identify as u-substitution and make some substitution
2. Make Correct Substation
3. Substitute and find \(du\)
4. Evaluate (attempt) new antiderivative
5. Correct antiderivative, with arbitrary constant