

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth 10 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. How soon will an investment at 4% annual interest rate compounded quarterly will increase by 50%?

2. Find the slope of the tangent line to the graph of the function $f(x) = \ln \sqrt{x^2 + 1}$ at $x = 2$.

3. Compute the integral $\int (7 + 10x)\sqrt{x} \, dx$.

4. Compute the integral $\int_1^2 \frac{2xe^{3x} + 5}{x} dx$. (You do not need to compute the final number numerically. Provide an expression that can be input to a calculator.)
5. A real estate investment originally worth \$5,000 grows at the rate of $400e^{0.05t}$ dollars per year, where t is in number of years since the investment was made. Find a formula giving the value of the investment $V(t)$ (in dollars) as a function of time t .