

YOUR NAME: \_\_\_\_\_

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Find the exact value of the logarithms

$$\log_2 \frac{1}{16} =$$

$$\log_{125} 5 =$$

2. Suppose that the value of a painting is estimated to be \$ 100 million dollars. If its value increases by 16% annually, how long will it take for the painting to double in value?

3. Find the following derivatives:

$$(\ln(x^4 + 1) - 4e^{x/2} - x)' =$$

$$(e^{-2x} - x^2 \ln x + x^3 - 7)' =$$

4. Find the following integrals:

$$\int (x^3 - 4x^3 + 1) dx =$$

$$\int \left( \frac{1}{x^4} + \frac{1}{\sqrt{x^5}} \right) dx =$$