

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. Compute the following integrals:

(a)  $\int \left( 6e^{3x} + 4x - \frac{5}{x} \right) dx =$

(b)  $\int \frac{(x-1)(x+7)}{x^2} dx =$

2. A culture of bacteria is growing at the rate of  $20e^{0.8t}$  cells per day where  $t$  is the number of days since the culture was started. If the culture began with 50 cells, find a formula for the total number of cells in the culture after  $t$  days.

3. Find the area under the graph of  $f(x) = 2e^{2x} - 6x^2$  from  $x = 0$  to  $x = 1$ .

