

QUIZ 8 - MATH 112

Thursday, April 11

YOUR NAME: _____

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

1. [8 points] Compute the following integrals:

$$\int (6x^2 + 8x + 7)dx =$$

$$\int \left(3\sqrt[3]{x} - \frac{10}{\sqrt[5]{x^3}} \right) dx =$$

$$\int \frac{x^3 + 7x + 1}{x^2} dx =$$

$$\int \left(5e^{3x} - \frac{7}{2x} \right) dx =$$

2. [6 points] Suppose that in a dish culture, there are originally 50 microorganisms. Their population increases at the rate of $7e^{0.02t}$ individuals per day.

(a) Find an equation for the population $P(t)$ of microorganisms present in the culture after t days.

(b) The research project calls for replenishing nutrients in the culture when the population reaches 3200 individuals. Can you help the researcher figure out how many days into the experiment she would have to replenish the nutrients?