

Name: _____

This quiz covers: 7.1 - 7.4

Directions: Complete all questions and **show all applicable work.** Partial credit will be given.

1.) Solve the differential equation:

$$\frac{dy}{dt} = yt^3$$

2.) If the solution to a differential equation is: $y = Ce^{kt}$ and the initial conditions $y(0) = 5$ and $y(10) = 20$ are given, solve for C and k .

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3.) A bacteria culture contains 200 cells initially and grows at a rate proportional to its size. After half an hour the population has increased to 360 cells. Find the number of bacteria after t hours.