

MA 238-01 §1.1-1.3	Quiz #1a	score	Name: _____ 8 September 1999
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1. Let $y(t)$ denote the population of a particular fish species (in tons, say) in a large lake and suppose $y(t)$ satisfies the differential equation

$$y' = -y^2 + 11y - 10.$$

Is there a population size below which the fish will die off? Is there an environmental carrying capacity? If so, find these numbers. What would happen to the population over time if the initial population was $y(0) = 2$? Explain. (10 points)

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2. Find the general solution to the given differential equation. Explain what happens to the solutions as t gets large. Then find the particular solution with the property $y(0) = 2$. (10 points)

$$\frac{dy}{dt} = 2ty + t$$