

MA 112 - Calculus II  
Worksheet # 10  
Professor Broughton

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## 1 Direction fields and stability analysis.

1. Draw the direction (slope) field for the given logistic differential equation by hand and then use Maple to verify the field. Assume that  $t \geq 0$  and  $y \geq 0$ .

$$y' = \frac{1}{2}y\left(1 - \frac{y}{100}\right).$$

2. Plot the right hand side of the differential equation on the real line and then make a stability analysis diagram (shown in class).

3. Predict the limiting populations for the following initial conditions  
 $y(0) = 150, y(0) = 100, y(0) = 50, y(0) = 0, y(0) = -50.$

## 2 From the supplement

Part 6 #2, #3, Part 7 #1, #2, #3, #4