

Warm-Up Problems and Lecture Problems
February 28, 2003

1. Solve the following equation for P :

$$\frac{M - P}{P} = Ae^{-kt} \tag{1}$$

2. Suppose you know that in equation (1) that M and k are constants given by $M = 100$ and $k = 2$. Suppose you also know that $P = 20$ when $t = 0$. Find A . Using the previous problem, write P as a function of t .

Lecture Problems

3. Draw a slopefield and some possible trajectories for the logistic differential equation:

$$\frac{dP}{dt} = 0.1P \left(1 - \frac{P}{500}\right)$$

4. Draw a slopefield and some possible trajectories for the differential equation:

$$\frac{dP}{dt} = -0.1P \left(1 - \frac{P}{500}\right)$$

5. Draw a slopefield and some possible trajectories for the differential equation:

$$\frac{dP}{dt} = 0.1P \left(1 - \frac{P}{500}\right) \left(1 - \frac{P}{250}\right)$$