Homework

Due Wednesday, 5 October 1994.

1. For our basic S–I–R model

$$\begin{aligned} S' &= -.00001SI \\ I' &= .00001SI - \frac{1}{14}I \\ R' &= \frac{1}{14}I \end{aligned}$$

   with the initial conditions

$$S(0) = 45400, \qquad I(0) = 2100, \qquad R(0) = 2500.$$

   Use the program `SIRplot.ms` (which you can get by typing `getclass howard SIRplot.ms`) to get graphs of $S(t)$, $I(t)$ and $R(t)$. Use this graph to answer the following questions:

   (a) What (approximately) is the time that the epidemic peaks?

   (b) What is the largest number of people who become infected at one time? What is the largest percentage of people that become infected?

2. Read pages 28–48 again and do problems 10, 11, 12 on page 42.

3. Read section 3.1 and on pages 105–106 do problems 1–7