

Mathematics 141 Homework

1. Problem 15 page 22 of the text.
2. Problem 16 page 22 of the text.
3. Problem 17 page 22 of the text.
4. In the last three problems you have computed the S , I , and R values at $t = 2$ in two ways. First by letting $\Delta t = 1$ and taking two steps. Second by letting $\Delta t = 2$ and only taking only one step.
 - (a) Explain why the two answers for S , I , and R are different.
 - (b) Which of the two answers do for S , I , and R do you think is closest to the true values? **Explain your answers in complete sentences.**
 - (c) How would you go about getting an even better estimate for S , I , R when $t = 2$. **Again explain you answers in complete sentences.**
5. Use the Maple program SIR.ms to compute S , I , and R at $t = 2$
 - (a) using $n = 10$ steps (which means the step size is $\Delta t = 2/10 = .2$).
 - (b) using $n = 100$ steps (which means the stepsize is $\Delta t = 2/100 = .02$).

(To get the program SIR.ms type `getclass howard SIR.ms` (and you must use the capitals). Then open maple and open the file `SIR.ms`. To do the problems above you will have to change some of the numbers in the program, but if you read the handout and the text in program I hope it is clear what has to be changed. If it is not clear then come complain to me, Bob, Chris or Donald and we will show you what has to be done.)

6. Problem 23 page 47 of the text. (To do this you will need to read problem 22 and the paragraph just above it. Also do not get discouraged if you do not see how to do the problem the first time you look at it. You should work in groups and discuss the problem.)

Important Note

On Monday you will given your first group project. (If you want to get a jump on things it will be the apple orchard problems on pages 59 and 60 of the text.) For these problems you will work in groups of four outside of class for a couple of weeks and will submitt one paper with all four of your names on it. The easiest thing for me is to have these groups be the same as the ones we have been using in class. If for some reason this will not work for your group, then come up with a group of four people you would preferr to work with. (Note that after this project I will bring in a anther deck of cards and you will get new groups, so none of the groups will be staying together more than the next two weeks.)