

Review for first exam

Section 1.1: This section introduces terminology and gives a few examples of differential equations.

Section 1.2: If a differential equation is of the form $dy/dx =$ (a function of x alone), then you can solve it by just integrating both sides with respect to x . The idea is illustrated in Examples 1 and 4 of this section.

Section 1.3: We skipped this section.

Section 1.4: The mathematical technique for solving separable equations is illustrated in Examples 1 through 4 of this section. You can also see similar techniques used in Examples 7 and 8. For this test, you won't need to know how to set up equations from word problems. So in reading Examples 7 and 8 you can just start from the differential equation (without needing to know how it was set up) and follow how it was solved. Of course, it is good to know something about where the equations came from, if only to get an feel for how the solutions should behave. You wouldn't expect the solution for the temperature of a cooling cup of water to oscillate up and down, for example.

Section 1.5: You can review the material on pages 48 to 52 from this section. You don't need to read the material on pages 53 to 55.

Section 1.6: You should review the entire section. There are a variety of methods covered here that you should be familiar with: one for homogeneous equations, one for Bernoulli equations, one for exact equations, and a couple for reducible second-order equations.

Section 3.1: You should review the entire section. There won't be questions on the test specifically on the theoretical material on pages 151 to 154, and it should be possible to do the problems on the test without knowing this material at all. (The problems on the test on second-order linear equations will be like those in Examples 4 to 7 and the ones on Assignment 3.) But you should try to get as much out of it as you can; the more theory you understand, the easier it becomes to integrate all the techniques you learn into a coherent whole, and so the easier it becomes to use and remember them.