MATH 201, SUMMER 2015, PRACTICE TEST FOR TEST 2

1) Find the general solution, including an interval, to the following differential equations.
   a)
   $$y''' + 3y'' + 3y' + 1 = 0$$
   b)
   $$y'' + 2y' + y = e^{-x} lnx$$

2) Find a solution to the following nonlinear differential equation. Don't worry about an interval.
   $$y^2 y'' = y'$$

3) Show using the definition of the Laplace Transform that the Laplace Transform of 1 is $\frac{1}{s}$.

4) Use the Laplace Transform to solve the following differential equation:
   $$y'' + 4y = e^t$$
   In the test (and the final exam), you will be provided with the table on the very last 2 pages of the text, so use that in order to help you solve this question.