QUIZ 4 MATH 260 NAME_____ID_____SECTION_____

Q1. Two solutions of the differential equation $x^2y''-xy'+y=0$ are $y_1=x$ and $y_2=x\ln x$. Do the following:

(a): Verify that $y_2=x\ln x$ satisfies the differential Equation.

(b): Construct general solution of the differential equation.

(c): Find a particular solution of the differential equation that satisfies initial conditions $y(1)=7,\quad y'(1)=2.$

(d): Find an interval over which the solutions are linearly independent.

Q2. Find general solutions of

(a): $y''+2y'+y=0$

(b): $y''+4y'+3y=0$ and

(c): $y^{(4)}+18y^{(2)}+81y=0$