QUIZ 4 - MATH 310 Thursday, February 13

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Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Solve the initial value problem

$$y'' + 10y' + 26y = 0, \quad y(0) = 5,\ y'(0) = 12.$$

2. [4 points] Solve the initial value problem

$$y'' + 14y' + 49y = 0, \quad y(0) = -3,\ y'(0) = 63.$$

3. [6 points] Consider the differential equation

$$t^3y'' - y' - (6t - 3t^{-1})y = 0.$$

Suppose we know that $y_1(t) = t^3$ is a solution. Find the first order differential equation that results from applying the method of reduction of order. (You do not have to solve the equation.)