QUIZ 3 - MATH 310   Thursday, February 15

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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. [6 points]

   (a) Write a second order linear homogeneous differential equation with constant coefficients,
       whose general solution is $y(t) = c_1 e^{4t} + c_2 t e^{4t}$. Please explain the thought process.

   (b) Find the particular solution of $y'' - 3y' + \frac{9}{4}y = 0$, $y(0) = 12$, $y'(0) = 33$.

2. [6 points] Consider the second order linear homogeneous differential equation

$$t^2 y'' + 2ty' - 2y = 0.$$

(a) Verify that $y_1(t) = t$ is a solution.

(b) Use reduction of order, showing all steps, to obtain a second solution $y_2(t)$.