

QUIZ 5 - MATH 310

Thursday, February 20

YOUR NAME: _____

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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] Find the general solution of

$$y'' + 6y' + 9y = 7 \cos 2t.$$

2. [4 points] Find the general solution of

$$2y'' + 13y' - 7y = 3e^{t/2}.$$

3. [4 points] Consider the differential equation

$$t^2 y'' - 3ty' + 4y = t^2 \ln t, \quad t > 0.$$

Suppose we know that $y_1(t) = t^2$ and $y_2(t) = t^2 \ln t$ are solutions of the homogeneous. Find a general solution of the given (nonhomogeneous) differential equation.