QUIZ 9 - MATH 310

Thursday, November 21

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 particular solution of the initial value problem

$$y'' + 9y = g(t), \quad y(0) = 1, \quad y'(0) = 3.$$

You may, of course, leave your answer in terms of a convolution integral.

2. [6 points] Find the general solution of the system

$$y' = \begin{pmatrix} 2 & 1 \\ -5 & 8 \end{pmatrix} y.$$

3. [4 points] Suppose that Line 7 is missing from the table of Laplace transforms. Show how one can use Line 16, instead, to compute the inverse Laplace transform of

$$H(s) = \frac{5}{s^2 - 25}.$$

(Hint: Split $H(s) = F(s)G(s)$.)