

QUIZ 8 - MATH 310

Friday, November 3

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] Use Laplace transforms to solve the initial value problem

$$y'' + y' = e^{-t}, \quad y(0) = 1, \quad y'(0) = 0.$$

2. [4 points] Compute from scratch (without the use of the table) the Laplace transform of

$$f(t) = u_3(t)e^{-t} + u_5(t)(t - e^{-t}) - u_8(t)t.$$

3. [4 points] Compute the Laplace transform of

$$f(t) = \begin{cases} \sin t, & \text{if } 0 \leq t < \pi \\ \sin t + \cos t, & \text{if } \pi \leq t < 2\pi \\ 2 \sin t + \cos t, & \text{if } t \geq 2\pi \end{cases}$$