

## MATH 341 – QUIZ # 4

**Instructions.** Show all your work. You may *not* use calculators, notes, or any other form of assistance on this quiz.

(1) (3 points) Compute the Laplace transform of  $y(t) = t \cos t$ .

(2) (4 points) Compute the convolution  $f * g$  of  $f(t) = t$  and  $g(t) = e^{2t}$ .

*please turn*  $\leftrightarrow$

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(3) (8 points) Use the method of Laplace transforms to find the solution of the initial value problem

$$y'' - 5y' + 4y = e^{2t}, \quad y(0) = 1, \quad y'(0) = -1$$

Hint:  $\mathcal{L}(e^{at}) = \frac{1}{s - a}$ .