

# Math 240 - Homework 3

December 2, 2021

Name \_\_\_\_\_

Score \_\_\_\_\_

The following problems are from the suggested homework. Show all work to receive full credit. Supply explanations when necessary. This assignment is due December 9.

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1. (4 points) Use Laplace transform techniques to solve:

$$tx'' + (t - 2)x' + x = 0, \quad x(0) = 0.$$

*Turn over.*

2. (2 points) Use the convolution theorem to find the inverse Laplace transform of

$$F(s) = \frac{s^2}{(s^2 + 4)^2}.$$

3. (2 points) Find the convolution of  $f(t) = g(t) = e^{at}$ .

4. (2 points) Find the inverse Laplace transform of  $F(s) = \ln \frac{s-2}{s+2}$ .