

Math 240 - Assignment 10

April 23, 2026

Name _____

Score _____

This assignment is for practice only. It will not be collected.

1. Use Laplace transform techniques to solve the initial value problem. You may use technology to compute any required partial fraction decompositions.

$$y'' - 3y' + 2y = \cos t, \quad y(0) = 0, \quad y'(0) = -1$$

2. Use Laplace transform techniques to solve the initial value problem. You may use technology to compute any required partial fraction decompositions.

$$y'' - 4y = 4t - 8e^{-2t}, \quad y(0) = 0, \quad y'(0) = 5$$

3. Use Laplace transform techniques to solve the initial value problem. You may use technology to compute any required partial fraction decompositions.

$$y'' - 6y' + 9y = t^2 e^{3t}, \quad y(0) = 2, \quad y'(0) = 6$$

4. Use Laplace transform techniques to solve. You may use technology to compute any required partial fraction decompositions.

$$y'' + 4y' + 4y = t^3 e^{-2t}; \quad y(0) = 5, \quad y'(0) = -10$$

5. Use Laplace transforms to solve the system of equations. Do not use technology.

$$x' = -x + y, \quad x(0) = 0$$

$$y' = 2x, \quad y(0) = 1$$

6. Use Laplace transforms to solve the initial value problem. Do not use technology.

$$x''' + x'' - 6x' = e^{4t}; \quad x(0) = 0, \quad x'(0) = 1, \quad x''(0) = 1$$