

Homework 9 (MATH 2310-04)**Name (Print):****Due date: April 30, 2013**

1. Use the Laplace transform to solve the given initial value problem.

$$y'' + y' + \frac{5}{4}y = f(t), \quad y(0) = 0, \quad y'(0) = 0, \quad f(t) = \begin{cases} \sin(t) & 0 \leq t < \pi \\ 0 & t \geq \pi \end{cases}$$

2. Use the Laplace transform to solve the given initial value problem.

$$y'' + 2y' + 2y = h(t), \quad y(0) = 0, \quad y'(0) = 1, \quad h(t) = \begin{cases} 1 & \pi \leq t < 2\pi \\ 0 & 0 \leq t < \pi \text{ and } t \geq 2\pi \end{cases}$$

3. Use the Laplace transform to solve the given initial value problem.

$$y'' + 4y = \sin(t) - u_{2\pi} \sin(t - 2\pi), \quad y(0) = 0, \quad y'(0) = 0$$