

## Homework 6

1. Solve the following equations using the Laplace transform

$$y' + 6y = e^{4t},$$

$$y'' + 5y' + 4y = 0,$$

$$y'' + 4y = \sin 2t.$$

2. Solve the initial value problems

$$y' - y = 1, \quad y(0) = 0,$$

$$y' + 3y = 13 \sin 2t, \quad y(0) = 6,$$

$$2y''' + 3y'' - 3y' - 2y = e^{-t}, \quad y(0) = 0, \quad y'(0) = 0, \quad y''(0) = 1,$$

$$y'' - 3y' + 2y = 0, \quad y(0) = 1, \quad y'(0) = 3.$$