

MATH 267 (Section E1) Homework No. 6

Reading

Sections 6.1 through 6.4

Suggested Problems

Section 6.1: Exercises 6, 7, 9.

Section 6.2: Exercises 1, 3, 9, 11, 12.

Section 6.3: Exercise 7, 9, 14, 16.

Section 6.4: Exercise 1, 5, 8.

Problems to be handed in in class on Tuesday, March 20-th

Problem 1 Use the method of Laplace transform to solve the following Boundary Value Problem,

$$y'' + 2y' + 5y = \cos(t), \quad y(0) = 0, \quad y'(0) = 1.$$

Problem 2 Calculate the Laplace transform of the following discontinuous function

$$f(t) = 1, \quad t \leq 1,$$

$$f(t) = t, \quad 1 < t \leq 2,$$

$$f(t) = t^2, \quad t > 2$$

Problem 3 Solve the following boundary value problem

$$y'' + 4y' + 4y = h(t), \quad y(0) = 0, \quad y'(0) = 0,$$

where $h(t)$ is the function

$$h(t) = 1, \quad \pi \leq t < 2\pi,$$

$$h(t) = 0, \quad 0 \leq t < \pi, \quad t \geq 2\pi.$$