Math 204 Fall 2017 Homework 1.

From the book W.E. Boyce, R. C. DiPrima and D. B. Meade:

Section 2.1., Problems: 2, 7, 10 , 21, 24, 30.

Section 2.2., Problems: 4, 7, 18, 23, 24.

and the following problem:

Problem 1 Suppose that a is a given positive number and $h(t)$ is a continuous function defined on $[0, \infty)$ such that

$$\lim_{t\to\infty} h(t) = 0.$$

Show that for each $y_0 \in \mathbb{R}$ solution $y(t)$ of the Cauchy problem

$$\begin{cases} y'(t) + ay(t) = h(t), t > 0, \\ y(0) = y_0, \end{cases}$$

tends to zero as $t \to \infty$.