CN 510 - Principles and Methods of Cognitive and Neural Modelling

Assignment # 1

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Problem 1

We are given the following non-homogeneous differential equation

$$\frac{dx}{dt} + Ax = I \tag{1}$$

The solution of course exists in two parts: homogeneous, and particlar. The homogenous solution can be found as follows:

$$\frac{dx_h}{dt} + Ax_h = 0 \tag{2}$$

$$\frac{dx_h}{dt} = -Ax_h \tag{3}$$

$$x_h(t) = Ce^{-At} \tag{4}$$

Figure 1: The above equation solved from t=0 to t=5.