PES University, Bangalore

UE18MA251- Linear Algebra (Jamuna S Murthy)

Session: Jan 2020 – May 2020

Scilab Assignment 3

1. Projections by Least Squares

Procedure: Suppose we do a series of experiments and expect the output b to be a linear function of the input t. We look for a straight line b = C + Dt. If there are experimental errors then we have a system of equations,

$$C + Dt_1 = b_1$$

$$C + Dt_2 = b_2 \text{ and so on.}$$

That is, we have the system of equations Ax = b. The best solution is obtained by minimizing the error

$$E^2 = \|b - Ax\|^2 = (b_1 - C - Dt_1)^2 + (b_2 - C - Dt_2)^2 + ... + (b_m - C - Dt_m)^2$$

Deadline : 30th March 2020