LE 230 Homework : Curve Fitting

Please show all details of your solutions.

4-1 Use least-squares regression to find R from the data (V (V), I (mA)) = (1, 1.05), (2, 1.99), (3,3.02), (4, 3.98), (5, 5.01)

4-2 Use least-squares regression to fit a straight line to the data

x	1	2	3	4	5	6	7	8	9	10
y	1	1.5	2	3	4	5	8	10	13	16

Plot the equation together with the data on the same graph.

4-3 Repeat problem 4-2 using polynomial regression to fit a parabola to the data.

4-4 Fit an exponential model to

x	0.4	0.8	1.2	1.6	2	2.3
y	800	975	1500	1950	2900	3600

Plot the data and the equation on both standard and semi-logarithmic graph.

4-5 Given the data

x	1.6	2	2.5	3.2	4	4.5
$f(x)$	2	8	14	15	8	2

find $f(2.8)$ and $f(3.5)$ by

(a) Newton's interpolating polynomials of order 1 through 3.

(b) Lagrange's polynomials of order 1 through 3.

(c) quadratic splines for the first 5 data points.

4-6 Given the data

x	1	2	3	5	7	8
$f(x)$	3	6	19	99	291	444

find $f(4)$ and $f(6)$ by

(a) Newton's interpolating polynomials of order 1 through 3.

(b) Lagrange's polynomials of order 1 through 3.

(c) quadratic splines for the first 5 data points.