Assignment 4

Problem # 1(Mark 20).

Use least-squares regression to fit a straight line to the following data set

x	0	2	4	6	9	11	12	15	17
y	5	6	7	6	9	8	7	10	12

a. Compute slope and intercept of the fitted line.
b. Compute the standard deviation, standard error of the estimate and coefficient of determination.
c. Plot the data and the regression line.

Problem # 2 (Mark 30)

Use non-linear regression (Gauss-Newton method) to fit $y = a(1 - e^{-bx})$ to the following data set.

x	5	10	15	20	25	30	35	40	45	50
y	17	24	31	33	37	37	40	40	42	41

a. Compute *a* and *b*
b. Compute the coefficient of determination
c. Plot the data and the regression line

Problem # 3 (Mark 50)

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

a. Calculate $f(2.8)$ using Newton's interpolating polynomials of order 1 through 3
b. Develop quadratic splines for the first 5 data points and predict $f(3.4)$ and $f(2.2)$
c. Draw the points along with interpolating curves and splines.