Computer Sciences for Engineers

Excercises - November 5, 2023

I. Least squares method

1.) ** Fit a function $g(x) = A_1 + A_2 \log_3 x$ for the table below!

x	0.3	1.1	3.1	9.1	27.1
$f(x)$	-1.1	1.1	3.1	4.1	7.1

2.) * The following points are given $(0; 1), (1; 3), (2; 4), (3; 6)$. Determine the closest linear function with least squares method!

3.) * Determine the closest linear function for the points $(x_i; y_i)$ with least squares method!

x_i	-2	-1	0	1	2
y_i	-4	-2	1	2	4

4.) * Determine the closest linear function for the points $(x_i; y_i)$ with least squares method!

x_i	-3	-2	0	1	4
y_i	-3	-2	1	2	5

5.) ** Determine the closest linear function and parabolic function for the points $(x_i; y_i)$ with least squares method!

x_i	-2	-1	1	2
y_i	3	1	0	2

6.) *** Determine the closest linear function and parabolic function and the function $f(x) = A + Bx + C \cdot \exp(x)$ for the points $(x_i; y_i)$ with least squares method!

x_i	-4	-1	0	2	3
y_i	-4	-2	-1	3	4