ISE416 Dynamic Programming, Assignment 1

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1) 2) 3)

For these three questions, the following table shows the result of parameter θ_i and MSE

	θ_0	θ_1	θ_2	θ_3	θ_4	θ_5	MSE
K=1	0.4421	-0.0348					0.2237
K=2	0.8622	-0.5077	-0.4786				0.0400
K=3	0.0010	0.2991	-0.1007	0.5996			0.0000
K=4	0.0018	-0.5216	0.1446	0.5167	0.4921		0.0000
K=5	0.0045	-1.2775	-0.4796	0.6939	0.8589	0.5093	0.0000

4)

Based on the table above, we can know that when K = 3 the residual is "close enough" to 0. Therefore the answer is K = 3

5)

The prediction of 10 next elements of the sequence is as the following table.

x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	x_{17}	x_{18}	x_{19}	x_{20}
0.182	0.141	0.313	0.189	0.111	0.203	0.164	0.096	0.135	0.130