

數值分析 Quiz 4

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Quiz:
Problem Set 3.2

9. ■ Fit a straight line and a quadratic to the data in the following table.

x	1.0	2.5	3.5	4.0	1.1	1.8	2.2	3.7
y	6.008	15.722	27.130	33.772	5.257	9.549	11.098	28.828

Which is a better fit?



n = 1

$$f(x) = -6.1898952506596x^0 + 9.43854353562004x^1$$

stdDev: 2.2435638279603114

x	y	f(x)
1.0	6.008	3.2486482849604403
2.5	15.722	17.4064635883905
3.5	27.13	26.84500712401054
4.0	33.772	31.56427889182056
1.1	5.257	4.192502638522445
1.8	9.549	10.799483113456471
2.2	11.098	14.57490052770449
3.7	28.828	28.732715831134552

n = 2

$$f(x) = 4.405673769460787x^0 + -1.0688961309256586x^1 + 2.1081182154008506x^2$$

stdDev: 0.8129279610540697

x	y	f(x)
1.0	6.008	5.444895853935979
2.5	15.722	14.909172288401958
3.5	27.13	26.488985449881405
4.0	33.772	33.85998069217176
1.1	5.257	5.7807110660775916
1.8	9.549	9.311963751693359
2.2	11.098	12.257394443964458

3.7	28.828	29.3108964538735	
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n = 2 is better with stdDev = 0.8129279610540697 ,
which is f(x) = 4.405673769460787x^0 + -1.0688961309256586x^1 + 2.1081182154008506x^2