计算物理作业 4

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班会新识：''物理学系就业面广。''

1 题目 1：牛顿插值法

1.1 题目描述

1. Newton interpolation of:

   (1) 10 equal spacing points of $\cos(x)$ within $[0, \pi]$;

   (2) 10 equal spacing points $\frac{1}{1+25x^2}$ within $[-1, 1]$.

   Compare the results with the cubic spline interpolation.

1.2 程序描述

1.3 伪代码

1.4 结果示例

2 题目 2：金属棒温度数据拟合

2.1 题目描述

1. The table below gives the temperature T along a metal rod whose ends are kept at fixed constant temperatures. The temperature is a function of the distance x along the rod.

   (1) Compute a least-squares, straight-line fit to these data using $T(x) = a + bx$.

   (2) Compute a least-squares, parabolic-line fit to these data using $T(x) = a + bx + cx^2$.

表 1: Temperature data along the metal rod

x_i (cm)	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
T_i (℃)	14.6	18.5	36.6	30.8	59.2	60.1	62.2	79.4	99.9

2.2 程序描述

2.3 伪代码

2.4 结果示例