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in [6]: %runfile C:/Users/jacks/OneDrive/Desktop/hw7/untitled0.py --wdir
題目1: 最小二乘法近似
(a)  $y = 6.691184389079x^2 + -1.883746442415x + 3.086393298356$ 
    误差: 0.005246
(b)  $y = 21.444544054590e^{(0.398495410350x)}$ 
    误差: 94.983021
(c)  $y = 6.238952153763x^2.019634283025$ 
    误差: 0.011721
Numeric coefficients (c0, c1, c2):
[0.498279307418, 0.326548331235, -0.232631445043]

Least squares polynomial p2(x) =
-0.232631445043*x**2 + 0.326548331235*x + 0.498279307418
Coefficients:
a0 = 0.1976721964763756
a1 = 0.07282665779142758 , b{k} = -0.2372491825589237
a2 = -0.022261826403210803 , b{k} = -0.12385900238552527
a3 = -0.03839016979470617 , b{k} = -0.07780929067701947
a4 = -0.043864787329514376 , b{k} = -0.05222269083814789

S4(x) symbolic form:
-0.237249182558924*sin(2*pi*x) - 0.123859002385525*sin(4*pi*x) - 0.0778092906770195*sin(6*pi*x) - 0.0522226908381479*sin(8*pi*x) + 0.0728266577914276*cos(2*pi*x) -
0.0222618264032108*cos(4*pi*x) - 0.0383901697947062*cos(6*pi*x) - 0.0438647873295144*cos(8*pi*x) + 0.197672196476376

Integral of S4 over [0,1] = 0.1976721964763756
Integral of f over [0,1]   = 0.22324427548393272
Continuous L2 error E(S4) = 0.1182990923363943
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