Math330

Assignment #5 Short Key

2nd semester   2018/2019   Mahmoud Ghannam

(Q1) (a) $S(x) = 4 - 2x$, $1 \le x \le 3$

(b) $S(x) = -\frac{1}{3}(x-1)^3 + \frac{5}{3}(x-1)^2 - 4(x-1) + 2$, $1 \le x \le 3$

(Q2) $f'(0) = 0$ $f'(2) = 11$ $f(0.4) \approx 1.672$ $f(1.5) \approx -0.125$

(Q3) $B = D = d = \frac{1}{4}$ $b = -\frac{1}{2}$

(Q4) (a) $y = 0.4x + 3.8$ rms error $= 2.14$

(b) $f(x) = -0.600x^2 + 3.97x$ $f(2.6) = 8.866$

(c) $\sum_{k=1}^{n} 2[\sin(Ax_k) + B\ln(x_k) - y_k]\, x_k \cos(Ax_k) = 0$

$\sum_{k=1}^{n} 2[\sin(Ax_k) + B\ln(x_k) - y_k]\, \ln(x_k) = 0$

(d) $y = 3.63xe^{-0.24x}$

(e) $g(x) = \frac{12.5x}{4.6+x}$ $y = 4.93$

(Q5) $A = 1$

(Q6) (a) $A \sum_{k=1}^{n} x_k^6 + B \sum_{k=1}^{n} x_k^3 \cos x_k = \sum_{k=1}^{n} y_k x_k^3$

$A \sum_{k=1}^{n} x_k^3 \cos x_k + B \sum_{k=1}^{n} \cos^2 x_k = \sum_{k=1}^{n} y_k \cos x_k$

(b) $A = 1.7089$ $B = -1.3562$

(c) $A = 1.7103$ $B = -1.3633$