Data Analysis: Assignment 09

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1.a)

a1 = B0 , b1 = B1 , c1 = B2 , d1 = B3

1.b)

B4(x^3 – 3x^2ξ + 3x ξ^2 – ξ^3)

a2 = B0 – B4 ξ^3 , b2 = B1 + 3B4 ξ^2 , c2 = B2 – 3B4 ξ , d2 = B3 + B4

1.c)

f1(x) = B0 + B1x + B2x^2 + B3x^3

f2(x) = (B0 - B4 ξ^3) + (B1 + 3B4 ξ^2)x + (B2 – 3B4 ξ)x^2 + (B3 + B4)x^3

f1(ξ) = B0 + B1 ξ + B2 ξ^2 + B3 ξ^3

f2(ξ) = (B0 - B4 ξ^3) + (B1 + 3B4 ξ^2) ξ + (B2 – 3B4 ξ) ξ ^2 + (B3 + B4) ξ ^3

= B0 + B1 ξ + B2 ξ^2 + B3 ξ^3

1.d)

f1’(x) = B1 + 2B2x + 3B3x^2

f2’(x) = (B1 + 3B4 ξ^2) + 2(B2 – 3B4 ξ)x + 3(B3 + B4)x^2

f1’(ξ) = B1 + 2B2 ξ + 3B3 ξ ^2

f2’(ξ) = (B1 + 3B4 ξ^2) + 2(B2 – 3B4 ξ) ξ + 3(B3 + B4) ξ ^2

= B1 + 2B2 ξ + 3B3 ξ^2

1.e)

f1’’(x) = 2B2 + 6B3x

f2’’(x) = 2(B2 – 3B4 ξ) + 6(B3 + B4)x

f1’’(ξ) = 2B2 + 6B3 ξ

f2’’(ξ) = 2B2 – 6B4 ξ + 6B3 ξ + 6B4 ξ

= 2B2 + 6B3 ξ

4.

