**HW 4 CS384**

6d.

Step 1:

L0: ((x-x1)/(x0-x1) \* (x-x2)/(x0-x2) \* (x-x3)/(x0-x3))

L1: ((x-x0)/(x1-x0) \* (x-x2)/(x1-x2) \* (x-x3)/(x1-x3))

L2: ((x-x0)/(x2-x0) \* (x-x1)/(x2-x1) \* (x-x3)/(x2-x3))

L3: ((x-x0)/(x3-x0) \* (x-x1)/(x3-x1) \* (x-x2)/(x3-x2))

p3:( (((x-x1)/(x0-x1) \* (x-x2)/(x0-x2) \* (x-x3)/(x0-x3)) \* y0) + (((x-x0)/(x1-x0) \* (x-x2)/(x1-x2) \* (x-x3)/(x1-x3)) \* y1) + (((x-x0)/(x2-x0) \* (x-x1)/(x2-x1) \* (x-x3)/(x2-x3)) \* y2) + (((x-x0)/(x2-x0) \* (x-x1)/(x2-x1) \* (x-x3)/(x2-x3)) \* y2) + ((x-x0)/(x3-x0) \* (x-x1)/(x3-x1) \* (x-x2)/(x3-x2)) (\* y3 ))

Step 2:

L0: ((.25--.5)/(-1--.5) \* (.25-0)/(-1-0) \* (.25-.5)/(-1-.5))

L1: ((.25--1)/(-.5--1) \* (.25-.5)/(-.5-.5) \* (.25-.5)/(-.5-.5))

L2: ((.25--1)/(0--1) \* (.25--.5)/(0--.5) \* (.25-.5)/(0-.5))

L3: ((.25--1)/(.5--1) \* (.25--.5)/(.5--.5) \* (.25-0)/(.5-0))

p3: ( (((.25--.5)/(-1--.5) \* (.25-0)/(-1-0) \* (.25-.5)/(-1-.5)) \* .86199480) + (((.25--1)/(-.5--1) \* (.25-.5)/(-.5-.5) \* (.25-.5)/(-.5-.5)) \* .95802009) + (((.25--1)/(0--1) \* (.25--.5)/(0--.5) \* (.25-.5)/(0-.5)) \* 1.0986123) + (((.25--1)/(0--1) \* (.25--.5)/(0--.5) \* (.25-.5)/(0-.5)) \* 1.0986123) + ((.25--1)/(.5--1) \* (.25--.5)/(.5--.5) \* (.25-0)/(.5-0)) (\* 1.2943767 ))

Step 3:

p(.25) = 1.1889320218750001

8d.

Part 2:

N = 3

Error Bound Equation

Derivative:

Max (

Absolute Error:

Absolute error: 1.189070 - 1.1889320218750001 =0.0001379781249999

8a

Step 1:

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2.2404

1.5742000000000012

1.223449999999997

1.051700000000002

Step 2:

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0.9517142857142844

0.7015000000000082

0.5724999999999832

Step 3:

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0.2780158730158624

0.21500000000004166

Step 4:

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0.06301587301582073

8b

Step 1:

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2.858899999999995

2.2404

1.5742000000000012

1.223449999999997

1.051700000000002

Step 2:

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1.2369999999999892

0.9517142857142844

0.7015000000000082

0.5724999999999832

Step 3:

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0.356607142857131

0.2780158730158624

0.21500000000004166

Step 4:

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0.07859126984126863

0.06301587301582073

Step 5:

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0.014159451659498086