ALG034

This is the natural cubic spline interpolation.

Choice of input method:

1. Input entry by entry from keyboard

2. Input data from a text file

3. Generate data using a function F with nodes entered from keyboard

4. Generate data using a function F with nodes from a text file

Choose 1, 2, 3, or 4 please

1

Input n

2

Input X(0) and F(X(0)) on separate lines.

0

0

Input X(1) and F(X(1)) on separate lines.

1

1

Input X(2) and F(X(2)) on separate lines.

2

2

Select output destination

1. Screen

2. Text file

Enter 1 or 2

1

NATURAL CUBIC SPLINE INTERPOLATION

The numbers X(0), ..., X(N) are:

0.00000000 1.00000000 2.00000000

The coefficients of the spline on the subintervals are:

for I = 0, ..., N-1

A(I) B(I) C(I) D(I)

0.00000000 1.00000000 0.00000000 0.00000000

1.00000000 1.00000000 0.00000000 0.00000000

function [c] = divided\_diff(x,y)

%divided\_diff

%takes in two arrays x and y

%returns array c

a=zeros(length(y));

a(:,1) = y;

for i=2:length(x)

for j=2:i

a(i,j) = (a(i,j-1)-a(i-1,j-1))/(x(i)-x(i-j+1));

end

end

c = diag(a);

end

>> divided\_diff([-.1,0,.2,.3],[5.3,2,3.19,1])

ans =

5.3000

-33.0000

129.8333

-556.6667