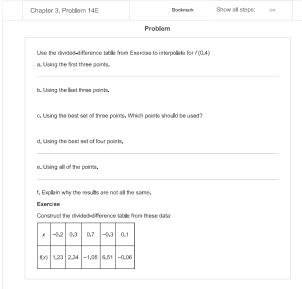
Experies Numerical. Analysis (ath Edition)



Step-by-step solution

Step 1 of 7

When using numerical approximation techniques, it is useful to have programs written to aid in numerical calculations to avoid calculations by hand. Using Matlab, create an

M-file named "ddtinterp.m" which will contain Matlab code that implements the algorithm to create a divided difference table interpolation corresponding to a set of node data points and interpolation point.

Inside this file, write the code to implement the method. One example of a correctly executable routine based on the algorithm description in the text is as follows:

function fp = ddtinterp(x,y,p)

%given an input vector x of x data values

%and an input vector f of f data values,

%the divided difference table d is generated

% and outputed. Additionally, an interpolation is

%performed using x=p.

n = length(x);

a(1) = y(1)

for k = 1 : n - 1

 $d(k, \ 1) = (y(k+1) - y(k))/(x(k+1) - x(k));$

end

for j = 2 : n - 1

for k = 1 : n - j

d(k,j) = (d(k+1,j-1) - d(k,j-1))/(x(k+j) - x(k));

end

for j = 2 : n

a(j) = d(1, j-1);

end

Df(1) = 1;

c(1) = a(1);

for j = 2 : n

Df(j)=(p - x(j-1)) .* Df(j-1);

c(j) = a(j) * Df(j);

end

d(n,:)=0;

d=[x' y' d];

d

fp=sum(c);

Comment

Step 2 of 7

a) To interpolate $\ fig(0.4ig)$ using the first three points, use the following Matlab commands

INPUT:

>> x=[-0.2,0.3,0.7];

>> f=[1.23,2.34,-1.05]; >> ddtinterp(x,f,0.4)

OUTPUT:

d =

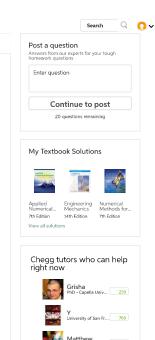
-0.2000 1.2300 2.2200 -11.8833

0,3000 2,3400 -8,4750 0

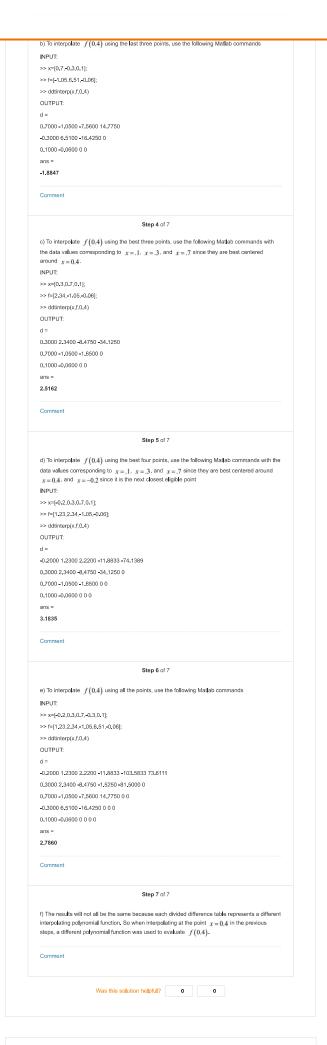
0.7000 -1.0500 0 0

1.8490

Comment



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Exercises 1 and 2 to get the quadratics in the form ax2 + bx + c, How different are the values for a, b, and c?Exercise 1Write out the Lagrangian polynomial from this table....

View this solution

of points: Point # 0123456789x10507590105150180190160130y10156C Draw the graph determined by the ten points.b. Why is the graph smoothly connected at points 3 and 67c....

View this solution

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