

EE 202 - Mathematical Techniques in Electrical Engineering

LAB1

** Find solutions of the following questions in Matlab:

Question 1:

For a function, the following data is given. By using Linear Interpolation (First order polynomial interpolation by Newton's divided difference polynomial method) find y at x = 16.

x	y
0	0
10	227.04
15	362.78
20	517.35
22.5	602.97
30	901.67

Solution 1:

```
x=[0 10 15 20 22.5 30];  
fx=[0 227.04 362.78 517.35 602.97 901.67];  
x_new=16;  
fx_new=( (fx(4)-fx(3)) * ((x_new-x(3))/(x(4)-x(3))) ) + (fx(3)) ;
```

Question 2:

For a function, the following data is given. By using Quadratic Interpolation (Second order polynomial interpolation by Newton's divided difference polynomial method) find y at x = 16.

x	y
0	0
10	227.04
15	362.78
20	517.35
22.5	602.97
30	901.67

Solution 1:

```
x=[0 10 15 20 22.5 30];  
fx=[0 227.04 362.78 517.35 602.97 901.67];
```

```
x_new=16;
fx0=fx(2);fx1=fx(3);fx2=fx(4);x0=x(2);x1=x(3);x2=x(4);
fx_new=(fx(2))+(((fx(3)-fx(2))/(x(3)-x(2)))*(x_new-
x(2)))+((((fx(4)-fx(3))/(x(4)-x(3)))-((fx(3)-fx(2))/(x(3)-
x(2))))/(x(4)-x(2)))*((x_new-x(2))*(x_new-x(3))));
```