

EE 202 - Mathematical Techniques in Electrical Engineering

LAB 2

** Find solutions of the following questions in Matlab:

Question 1:

Given the data as

i	1	2	3	4	5	6
x	0	0.5	1	1.5	2	2.5
y	0	1.5	3	4.5	6	7.5

Find the curve fitted by a straight line by using least squares. Find the error.

```
x=[0 0.5 1 1.5 2 2.5]; y=[0 1.5 3 4.5 6 7.5];
n=length(x); sumx=0; sumy=0; sumxy=0; sumxsq=0; error=0;
for i=1:n
sumx=sumx+x(i);
end
for i=1:n
sumy=sumy+y(i);
end
for i=1:n
sumxy=sumxy+(x(i).*y(i));
end
for i=1:n
sumxsq=sumxsq+(x(i).^2);
end
a=-((sumx)*(sumy))+(n*sumxy)/((n*sumxsq)-(sumx.^2));
```

```
b=(((sumxsq)*(sumy))-((sumx)*(sumxy)))/((n*sumxsq)-(sumx.^2));
fx=a*x+b;
plot(x,fx)
for i=1:n
error=error+(((y(i))-(a*x(i)+b)).^2);
end
error
```

Question 2:

Given the data as $x = [0 \ .5 \ 1 \ 1.5 \ 2 \ 2.5]$, $y = [-0.4326 \ -0.1656 \ 3.1253 \ 4.7877 \ 4.8535 \ 8.6909]$. Find the curve fitted by a straight line by using least squares. Find the error.