

## EE 202 - Mathematical Techniques in Electrical Engineering

### LAB 5

\*\* Find solutions of the following questions in Matlab:

#### Question 1:

Solve  $\frac{dy}{dx} = \frac{y \ln y}{x}$  and  $y(2) = e$  from  $x = 2$  to  $x = 3$  with steps  $h = 0.1$

```
clear all;clc;
%step size
h=0.1;
%starting point
x=2:h:3;
y=zeros(1,length(x)-1);
y(1)=exp(1);
derivative=zeros(1,length(x)-1);
for i=1:length(x)-1
derivative(i)=(y(i)*log(y(i)))/x(i);
y(i+1)=y(i)+((h)*(derivative(i)));
end
f=exp(0.5*x);
plot(x,y)
hold on
plot(x,f,'r')
hold off
```

## Question 2:

Solve  $\frac{dy}{dx} = \sin(x+y) - e^x$  and  $y(0) = 4$  from  $x = 0$  to  $x = 3.2$  with steps  $h = 0.1$

```
clear all;clc;
%step size
h=0.1;
%starting point
x=0:h:3.2;
y=zeros(1,length(x)-1);
y(1)=4;
derivative=zeros(1,length(x)-1);
for i=1:length(x)-1
derivative(i)=sin(x(i)+y(i))-(exp(x(i)));
y(i+1)=y(i)+(h)*(derivative(i));
end
plot(x,y)
```