

ADEBAJO-AKINPELU VICTOR

ELECTRICAL AND ELECTRONICS ENGINEERING

ENGINEERING MATHS ASSIGNMENT 2

17/ENG04/079

SOLUTION

MATLAB CODE

```
commandwindow
clear
clc
close all
syms x
format short g
f= exp(-0.5*(x))*(4-x) - 2
ff= diff(f)
fs= (x - f/ff)
x= 0.5

for i= 1:50
    iter(i+1)= i;
    x(i+1)=subs(fs,x(i));
    Ea(i+1)= ( x(i+1)- x(i))*100/ x(i+1);
    if Ea(i+1)<= 1E-9
        break
    end
end
ans = [iter',x',Ea']
```

SOLUTION

$$f = -\exp(-x/2) \cdot (x - 4) - 2$$

$$ff = (\exp(-x/2) \cdot (x - 4)) / 2 - \exp(-x/2)$$

$$fs = x - (\exp(-x/2) \cdot (x - 4) + 2) / (\exp(-x/2) - (\exp(-x/2) \cdot (x - 4)) / 2)$$

$$x = 0.5$$

ans =

| | | |
|---|---------|------------|
| 0 | 0.5 | 0 |
| 1 | 0.83889 | 40.397 |
| 2 | 0.88496 | 5.2054 |
| 3 | 0.88571 | 0.084972 |
| 4 | 0.88571 | 2.2247e-05 |
| 5 | 0.88571 | 1.5293e-12 |