

OLADIPO TOMI ISAAC

17/ENG05/030

MECHATRONICS ENGINEERING

ENG 382

Command window

clear

clc

syms x

format short g

$$F = \exp(-0.5 * x) * (4 - x) - 2$$

$$F_{\text{prime}} = \text{diff}(F);$$

$$x = 0.5; j$$

for i = 1:10;

$$\text{iter}(i+1) = i; j$$

$$x(i) = x; j$$

$$x = \text{double}(\text{subs}(x - (f/f_{\text{prime}})))$$

$$x(i+1) = x; j$$

$$ea(i+1) = \text{abs}((x(i+1) - x(i)) / x(i+1)) * 100; j$$

$$\text{if } ea(i+1) \leq 1E-2; j$$

break

end

end

$$\text{Isaac} = \text{Table}(\text{iter}', x', ea')$$

$$\text{Isaac.Properties.VariableNames} = \{\text{'iteration number'}, \text{'values of } x\}, \text{'errors'}$$

# OUTPUT

Isaac =

iter	Values of $x$	Error
0	0.5	0
1	0.83889	40.397
2	0.88496	5.2054
3	0.88571	0.084972
4	0.88571	$2.2247 e - 0.5$
5	0.88571	$1.5293 e - 12$
6	0.88571	0