

ASSIGNMENT 1

20/03/2020 FIDE-ARWUOBI ANTHONY CHIZALU 17/ENGG06/037 MECHANICAL ENG 300LVL ENG 384

Command window

clear

clc

syms x

format short g

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

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

$x = 0.5;$

for $i = 1 : 10;$

iter($i+1$) = $i;$

$X(i) = x;$

$x = \text{double}(\text{subs}(x - (F/F_{prime})))$

$X(i+1) = x;$

$eq(i+1) = \text{abs}(X(i+1) - X(i)) / X(i+1) * 100;$

if $eq(i+1) \leq 1E-21;$

break

end

end

$roid = \text{table}(\text{iter}', X', eq')$

$roid$ -properties, variable names = {iteration number; 'values of x'; 'errors'}

Output

$roid =$

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	$2.2247e^{-0.5}$
5	0.88571	$1.5293e^{-12}$
6	0.88571	0