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MATRIC NUMBER: 171ENG02/061

DEPARTMENT: COMPUTER ENGINEERING

COURSE CODE: ENIG 382

MATLAB Code

1) command window

2) clear

3) clc

4) format short

5) $x(1) = 0.5;$

6) $k = 1;$

7) tolerance = $10^{-21};$

8) max1 = 80;

9) error(1) = 0;

10) syms x

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

12) $g1 = \text{diff}(g);$

13) for $k = 2 : \text{max1};$

14) $x(k) = (x(k-1)) - ((\text{subs}(g, x(k-1))) / \text{subs}(g1, x(k-1)));$

15) $k = [k \quad k];$

16) $\text{error}(k) = \text{abs}(x(k) - x(k-1)) * 100;$

17) if $\text{error}(k) < \text{tolerance}, \text{break}, \text{end};$

18) end

19) $\text{Table} = \text{table}(k', x', \text{error}')$

MATLAB Output

- | | | |
|----|---------|------------------|
| 1) | 0.5 | 0 |
| 2) | 0.83889 | 33.889 |
| 3) | 8.88571 | 4.6065 |
| 4) | 0.88571 | 0.07526 |
| 5) | 0.88571 | $1.9904e^{-0.5}$ |
| 6) | 0.88571 | $1.3545e^{-12}$ |
| 7) | 0.88571 | 0 |