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17/PWG05/1010

Mechanics

Solution

Command window

clear

clc

syms x

format short g

f = exp(-0.5 * x) * (4 - x) - 2 ;

fprime = diff(f);

x = 0.5 ;

for i = 1:10 ;

iter(i+1) = i ;

x(i) = x ;

x = double(subs(x - (f/fprime)))

x(i+1) = x ;

ea(i+1) = abs((x(i+1) - x(i)) / x(i+1)) * 100 ;

If ea(i+1) <= 1E-21 ;

break

end

end

table = table(iter, x, ea)

table.Properties.Variable names = { 'iteration number', 'values', 'errors' }

Output

Table =

Iter	Values of x	errors
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