Newtons-Raphson Method

Algorithms

1. Read  x0, e, n, N where x0 is the initial guess of the root, e the allowed error, n the order of the polynomial, and N the total number of iterations.
2. for i=0 to n in steps of 1 do Read bi end for.
3. for i=0 to n-1 in steps of 1 do Read bi end for.
4. P=an
5. bn-1=an
6. S=bn-1
7. for k=1 to N in steps of 1 do
8. for i=1 to n-1 in steps of 1 do
9. bn-(i+1)=an-i+x0bn-i
10. S=bn-(i+1)+x0S  
    endfor
11. P=a0 + b0x0
12. x1=x0-(P/S)
13. if |x1–x0/x1| ≤ e goto step 18  
    else
14. x0=x1  
    endif  
    endfor
15. write “root not found in N iterations”
16. write S, P, x1, x0
17. stop
18. write “root found in k iterations”
19. x0=x1
20. write  x0, S, P
21. stop