Module 1

Successive Substitution

Definition

An iterative method for solving a nonlinear equation for the unknown(s).

Steps

1. Rewrite a nonlinear function into a form given by x = f(x)
2. Take xold and find xnew a s xnew = f(xold)
3. Keep iterating (for loop will be good). Say 10 steps.
4. Instead stop iteration when error is acceptable (for example abs(xnew-xold)<epsilon, the tolerance say 1e-6.

Let us look at the Maple steps for solving $x^2-3x+2x^{0.05} = 1$

Homework 1 (due on 04/06/16):

Complete all the commands in chapter 1 till section 1.1.8 (page 19).

Complete all the homework problems in chapter 1.

Solve chapter 1 problem 9.3 using successive substitution method. Take initial guess = 0.1 and tolerance = 1e-6.

Optional problem: Solve exercise problem 9.1 and 9.2 in chapter 1 using successive substation method. You need to rewrite the method and procedures for systems of equations.