CLL:113-Tut-5

Multivariate Non-linear Algebraic Equations:

Q1.

Use Newton Raphson Method find the solution of

$$x^3 - 5x^2 + 2x - y + 13 = 0$$
$$x^3 + x^2 - 14x - y - 19 = 0$$

with the help of excel

(1) Using $(x^{(0)}, y^{(0)})=(8,10)$

(2) Using $(x^{(0)}, y^{(0)})=(50,60)$

Q2. Consider the problem of finding the intersection points of the sphere $x^2 + y^2+z^2 = 4$, the circular cylinder $x^2 + y^2 = 1$, and the elliptical cylinder $4y^2+z^2 = 4$ with the help of a computer program involving multivariable Newton Raphson method. Use $(x^{(0)}, y^{(0)}$, $y=z^{(0)})=(1,1,1)$. Draw the true error and the relative errors with iteration step.