ESO 208A; ESO 218

Computational methods in engineering

Tutorial # 2

1) Employ the Newton-Raphson method to determine a real root of $f(x) = -x^2+1.8x+2.5$ using initial guess of 5. Perform the computation until ε_a is less than 0.05%.
   Attempt the above problem by fixed point iteration.
2) Use Muller's method to determine the real and complex roots of $f(x) = 2x^4 + 6x^2 + 8$.
3) Use Bairstow's method to determine the roots of $f(x) = x^4 - 2x^3 + 6x^2 - 2x + 5$.
4) Determine the roots of simultaneous nonlinear equations

   $$y = -x^2 + x + 0.75$$
   $$y + 5xy = x^2$$

   Employ initial guesses of $x = y = 1.2$.