

Tutorial 3

Multiple roots

1. Find a solution for

$$f(x) = x^3 - 7x^2 + 16x - 12 = 0$$

by the following methods. Use ~~0.5~~^{1.0} as the guess value.

- (a) Newton-Raphson method;
- (b) First Modification of Newton-Raphson method [use multiplicity of root $m = 2$];
- (c) Second Modification of Newton-Raphson method.

Comment on the convergence rate.

Roots of the polynomial

2. Solve the equation given in the first problem by:
 - (a) Müller's method [use guess values x_0 , x_1 , and x_2 as 0.0, 1.25 and 3.25, respectively]
 - (b) Bairstow's method [use initial guess of $r = s = -1.0$]