Convergence Rate: $\lim\limits_{k \to \infty} \dfrac{\|e_{k+1}\|}{\|e_k\|^r} = C$

Secant Method: $x_{k+1} = x_k - \dfrac{f(x_k)(x_k - x_{k-1})}{f(x_k) - f(x_{k-1})}$

Newton's Method: $x_1 = x_0 - \dfrac{f(x_0)}{f'(x_0)}$

Newton Method (multivariable): $x_{k+1} = x_k - H_f(x_k)^{-1} \nabla f(x_k)$

General Iterations Form: $x_{k+1} = x_k + \alpha_k d_k$

Nonlinear Least Squares: $\min\limits_{\mathbf{x}} \sum\limits_{i=1}^{n} (r_i(\mathbf{x}))^2$

Residual Vector $r = b - Ax$

Lagrange Interpolation: $\ell(t) = \prod\limits_{k=1}^{n}(t - t_k)$, $w_j = \dfrac{1}{\ell'(t_j)} = \dfrac{1}{\prod_{k \neq j}(t_j - t_k)}$, $\ell_j(t) = \ell(t) \cdot \dfrac{w_j}{t - t_j}$

Quadrature Rules: $Q_n(f) = \sum\limits_{i=1}^{n} w_i f(x_i)$