1) Całkowanie numeryczne: kwadratury:
Newtona-Cotesa: prostokątów, trapezów, parabol; Gaussa: 2-punktowa, 3- punktowa:

a) $S(f) = (b-a)\, f(x_0)$,

b) $S(f) = \frac{b-a}{2}\Big[\, f(a) + f(b)\Big]$,

c) $S(f) = \frac{1}{3}\, h\,\big(f_0 + 4\, f_1 + f_2\big)$, $\quad h = \frac{b-a}{2}$,

d) $S(f) = \frac{b-a}{2}\sum_{i=0}^{n} w_i\, f\Big(\frac{a+b}{2} + \frac{b-a}{2}\,\xi_i\Big)$,

gdzie: $\boldsymbol{\xi}_2 = \big[\frac{1}{\sqrt{3}},\ \frac{-1}{\sqrt{3}}\big]$, $\quad \mathbf{w}_2 = [1, 1]$, $\qquad \boldsymbol{\xi}_3 = \big[\sqrt{0.6},\ 0,\ -\sqrt{0.6}\big]$, $\quad \mathbf{w}_3 = \big[\frac{5}{9},\ \frac{8}{9},\ \frac{5}{9}\big]$

2) Szereg Taylora:
$f(x+h) = f(x) + hf'(x) + \frac{1}{2}h^2 f''(x) + \frac{1}{6}h^3 f'''(x) + \frac{1}{24}h^4 f^{IV}(x) + \dots$

3) Problem początkowy: metody:
Eulera, polepszona Eulera, Runge-Kutty II rzędu, Runge-Kutty III rzędu, Runge-Kutty IV rzędu
dla $x_{n+1} = x_n + h$

a) $y_{n+1} = y_n + k_1$, $\quad k_1 = h \cdot f(x_n,\ y_n)$,

b) $y_{n+1} = y_n + k_2$,
$k_1 = h \cdot f(x_n,\ y_n)$, $\quad k_2 = h \cdot f(x_n + \frac{1}{2}h,\ y_n + \frac{1}{2}k_1)$,

c) $y_{n+1} = y_n + \frac{1}{2}(k_1 + k_2)$,
$k_1 = h \cdot f(x_n,\ y_n)$, $\quad k_2 = h \cdot f(x_n + h,\ y_n + k_1)$,

d) $y_{n+1} = y_n + \frac{1}{4}(k_1 + 3k_3)$,
$k_1 = h \cdot f(x_n,\ y_n)$, $\quad k_2 = h \cdot f(x_n + \frac{1}{3}h,\ y_n + \frac{1}{3}k_1)$, $\quad k_3 = h \cdot f(x_n + \frac{2}{3}h,\ y_n + \frac{2}{3}k_2)$,

e) $y_{n+1} = y_n + \frac{1}{6}(k_1 + 2k_2 + 2k_3 + k_4)$,
$k_1 = h \cdot f(x_n,\ y_n)$, $\qquad k_2 = h \cdot f(x_n + \frac{1}{2}h,\ y_n + \frac{1}{2}k_1)$,
$k_3 = h \cdot f(x_n + \frac{1}{2}h,\ y_n + \frac{1}{2}k_2)$, $\quad k_4 = h \cdot f(x_n + h,\ y_n + k_3)$.

4) Problem brzegowy:
$f' = \frac{1}{2h}\big(-1f_{i-1} + 1f_{i+1}\big)$, $\qquad f'' = \frac{1}{h^2}\big(1f_{i-1} - 2f_i + 1f_{i+1}\big)$,
$f''' = \frac{1}{2h^3}\big(-1f_{i-2} + 2f_{i-1} - 2f_{i+1} + 1f_{i+2}\big)$, $\qquad f^{IV} = \frac{1}{h^4}\big(1f_{i-2} - 4f_{i-1} + 6f_i - 4f_{i+1} + 1f_{i+2}\big)$

5) Krok potęgowy i iloraz Rayleigha
$\mathbf{x}^{(k+1)} = \mathbf{A}\,\mathbf{u}^{(k)}$,
$\lambda^{(k+1)} = \big(\mathbf{u}^{(k)}\big)^{\mathrm{T}}\,\mathbf{A}\,\mathbf{u}^{(k)} = \big(\mathbf{u}^{(k)}\big)^{\mathrm{T}}\,\mathbf{x}^{(k+1)}$