$$\rightarrow y(x) = 3 + \int_0^x 2y(s) + s - 2\,ds$$

Picard-féle integrálegyenlet

$\boxed{2.}$ $y_0(x) = y(0) = 3$

$$y_1(x) = 3 + \int_0^x 2y_0(s) + s - 2\,ds$$

$\vdots$

$$y_{n+1}(x) = 3 + \int_0^x 2y_n(s) + s - 2\,ds$$

$$y_1(x) = 3 + \int_0^x 2\cdot 3 + s - 2\,ds = 3 + \int_0^x s + 4\,ds = \left[\frac{s^2}{2} + 4s\right]_0^x + 3$$

$$y_2(x) = 3 + \int_0^x 2\left(\frac{s^2}{2} + 4s + 3\right) + s - 2\,ds = 3 + \int_0^x s^2 + 9s + 4\,ds =$$

$$= 3 + \left[\frac{s^3}{3} + \frac{9}{2}s^2 + 4s\right]_0^x$$

$$y_3(x) = 3 + \int_0^x 2\left(\frac{s^3}{3} + \frac{9}{2}s^2 + 4s\right) + s - 2\,ds = 3 + \int_0^x \frac{2}{3}s^3 + 9s^2 + 9s$$

$$+ 4)\,ds = \left[3 + \frac{2}{12}s^4 + \frac{9}{3}s^3 + 9s\right]_0^x$$

$\vdots$

$$y_n = \left[\frac{2^{n-2}}{3\cdot 4 \dots (n+1)} s^{n+1} + \dots\right.$$