

Dosadíme do (1)

$$\begin{aligned}
& u_{n+1}''(t) - \frac{\partial f(t, u_n)}{\partial u} u_{n+1}(t) - u_n(t) + \\
& + \frac{\partial f(t, u_n)}{\partial t} u_n(t) = -u_n''(t) + f(t, u_n)
\end{aligned}$$

Ukážeme

$$\begin{aligned}
& u_{n+1}''(t) - \frac{\partial f(t, u_n)}{\partial u} u_{n+1}(t) = f(t, u_n) - \frac{\partial f(t, u_n)}{\partial u} u_n(t) \\
& u_{n+1}(0) = u_{n+1}(1) = 0
\end{aligned}$$

Řešíme lineární okrajovou úlohu.