Tm.: Za proizvoljni $u \in [0,1]$ i

$$r_i' := (1-u) r_i + u r_{i+1}, \quad i = 0,1,2$$

$$s_i = (1-u) r_i' + u r_{i+1}', \quad i = 0,1$$

$$t_0 = (1-u) s_0 + u s_1$$

vrijedi $f(u) = t_0$.

Dokaz:

$$f(u) = b_0(u) r_0 + b_1(u) r_1 + b_2(u) r_2 + b_3(u) r_3$$

$$b_k(t) = \binom{n}{k} t^k (1-t)^{n-k},$$ uzimamo $n = 3$ (Bernstein polinomi)

$$\left.\begin{aligned} b_0(u) &= (1-u)^3 \\ b_1(u) &= 3u(1-u)^2 \\ b_2(u) &= 3u^2(1-u) \\ b_3(u) &= u^3 \end{aligned}\right\} \quad f(u) = (1-u)^3 r_0 + 3u(1-u)^2 r_1 + 3u^2(1-u) r_2 + u^3 r_3$$

$$t_0 = (1-u) s_0 + u s_1 = (1-u) \cdot \Big((1-u)\big((1-u) r_0 + u r_1\big) + u\big((1-u) r_1 + u r_2\big)\Big) + u \cdot \Big((1-u)\big((1-u) r_1 + u r_2\big) + u\big((1-u) r_2 + u r_3\big)\Big) = \dots = (1-u)^3 r_0 + (1-u)^2 u r_1 + 2u(1-u)^2 r_1 + 2u^2(1-u) r_2 + u^2(1-u) r_2 + u^3 r_3$$

$$= (1-u)^3 r_0 + 3u(1-u)^2 r_1 + 3u^2(1-u) r_2 + u^3 r_3$$

$$= f(u)$$

■