Z3

Warunki

I) $f(x_k) = y_k$

II) f, f', f'' są ciągłe na $[-2, 2]$

III) $f\big|_{[x_{k-1}, x_k]} \in \Pi_3$

IV) $f''(-2) = S''(2)$

$$f(x) = \begin{cases} x^3 + 6x^2 + 18x + 13, & x \in [-2, -1] \\ -5x^3 - 12x^2 + 7, & x \in [-1, 0] \\ 5x^3 - 12x^2 + 7, & x \in [0, 1] \\ -x^3 + 6x^2 - 18x + 13, & x \in [1, 2] \end{cases}$$

$$f'(x) = \begin{cases} 3x^2 + 12x + 18, & x \in [-2, -1] \\ -15x^2 - 24x, & x \in [-1, 0] \\ 15x^2 - 24x, & x \in [0, 1] \\ -3x^2 + 12x - 18, & x \in [1, 2] \end{cases}$$

$$f''(x) = \begin{cases} 6x + 12, & x \in [-2, -1] \\ -30x - 24, & x \in [-1, 0] \\ 30x - 24, & x \in [0, 1] \\ -6x + 12, & x \in [1, 2] \end{cases}$$

I) z braku możliwości sprawdzenia zakładam, że tak

II) $f_1(-1) \stackrel{?}{=} f_2(-1)$: $-1 + 6 - 18 + 13 = 0$, $5 - 12 + 7 = 0$ ✓

$f_2(0) \stackrel{?}{=} f_3(0)$: $0 + 0 + 7 = 7$, $0 + 0 + 7 = 7$ ✓

$f_3(1) \stackrel{?}{=} f_4(1)$: $5 - 12 + 7 = 0$, $-1 + 6 - 18 + 13 = 0$ ✓

$f_1'(-1) \stackrel{?}{=} f_2'(-1)$: $3 - 12 + 18 = 9$, $-15 + 24 = 9$ ✓

$f_2'(0) \stackrel{?}{=} f_3'(0)$: $0 + 0 = 0$, $0 + 0 = 0$ ✓

$f_3'(1) \stackrel{?}{=} f_4'(1)$: $15 - 24 = -9$, $-3 + 12 - 18 = -9$ ✓

$f_1''(-1) \stackrel{?}{=} f_2''(-1)$: $-6 + 12 = 6$, $30 - 24 = 6$ ✓

$f_2''(0) \stackrel{?}{=} f_3''(0)$: $0 - 24 = -24$, $0 - 24 = -24$ ✓

$f_3''(1) \stackrel{?}{=} f_4''(1)$: $30 - 24 = 6$, $-6 + 12 = 6$ ✓

III) Widać

IV) $f''(-2) \stackrel{?}{=} f''(2)$: $-12 + 12 = 0$, $-12 + 12 = 0$ ✓