

mogą być obliczeniówki ale dobra metoda i wzory (szczególnie że wynik dziki)

L6.6. 1 punkt Podaj postać Lagrange'a wielomianu interpolacyjnego dla danych

x_k	-10	-5	7	11
y_k	8	-3	5	0

$$0: (8+3)(8-5)8 = 11 \cdot 3 \cdot 8 = 264$$

$$1: -11(-8)(-3) = -264$$

$$2: 11 \cdot 12(-4) = -528$$

$$3: 21 \cdot 16 \cdot 4 = 1344$$

$$L_3(x) = y_0 \lambda_0(x) + y_1 \lambda_1(x) + y_2 \lambda_2(x) + y_3 \lambda_3(x)$$

$$\lambda_0 = \frac{x-x_1}{x_0-x_1} \cdot \frac{x-x_2}{x_0-x_2} \cdot \frac{x-x_3}{x_0-x_3} = (x+5)(x-7)(x-11) \cdot \frac{1}{264} \cdot y_0 = \frac{1}{264}$$

$$\lambda_1 = \frac{x-x_0}{x_1-x_0} \cdot \frac{x-x_2}{x_1-x_2} \cdot \frac{x-x_3}{x_1-x_3} = (x+10)(x-7)(x-11) \cdot \frac{1}{-264} \cdot y_1 = -\frac{1}{264}$$

$$\lambda_2 = \frac{x-x_0}{x_2-x_0} \cdot \frac{x-x_1}{x_2-x_1} \cdot \frac{x-x_3}{x_2-x_3} = (x+10)(x+5)(x-11) \cdot \frac{1}{-216} \cdot y_2 = -\frac{5}{816}$$

$$\lambda_3 = \frac{x-x_0}{x_3-x_0} \cdot \frac{x-x_1}{x_3-x_1} \cdot \frac{x-x_2}{x_3-x_2} = (x+10)(x+5)(x-7) \cdot \frac{1}{1344} \cdot y_3 = 0$$

$$L_3 = \frac{1}{33}(x+5)(x-7)(x-11) + \frac{1}{88}(x+10)(x-7)(x-11) - \frac{5}{816}(x+10)(x+5)(x-11) + 0 \cdot (x+10)(x+5)(x-7) =$$

$$\frac{1}{33}x^3 - \frac{13}{33}x^2 - \frac{13}{33}x + \frac{35}{3} + \frac{1}{88}x^3 - \frac{1}{11}x^2 - \frac{103}{88}x + \frac{770}{88} - \frac{5}{816}x^3 + \frac{20}{816}x^2 + \frac{675}{816}x + \frac{2750}{816} =$$

$$\frac{29}{816}x^3 - \frac{381}{816}x^2 - \frac{7717}{816}x + \frac{3235}{136}$$