

Radami:

x	1	1	2	3
y	2	3	1	4

a) lin. aproks
b) kvadr. aproks

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i	x_i	x_i^2	y_i	$x_i y_i$
1	1	1	2	2
2	1	1	3	3
3	2	4	1	2
4	3	9	4	12
Σ	7	15	10	19

$$a \sum_{i=1}^m x_i^2 + b \sum_{i=1}^m x_i = \sum_{i=1}^m x_i y_i$$

$$a \sum_{i=1}^m x_i + b m = \sum_{i=1}^m y_i$$

$$15a + 7b = 19 \Rightarrow$$

$$7a + 4b = 10 \Rightarrow 7a = 10 - 4b$$

$$a = \frac{10 - 4b}{7}$$

$$\Rightarrow a = \frac{10 - 4 \cdot \frac{17}{11}}{7}$$

$$= \frac{10 - \frac{68}{11}}{7}$$

$$= \frac{42}{11}$$

$$= \frac{42}{11} = \frac{6}{11}$$

$$\left(\frac{150}{7} - \frac{60b}{7} \right) + 7b = 19$$

$$-11b = -17$$

$$b = \frac{17}{11}$$

$$y = ax + b$$

$$y = \frac{6}{11}x + \frac{17}{11}$$

$$f(0) = \frac{17}{11} \text{ do grafu}$$

$$f(10) = \frac{60}{11} + \frac{17}{11} = \frac{77}{11} = 7$$

$$a = \frac{6}{11}$$

$$b) c_0(m+1) + c_1 \sum_{i=0}^m x_i + c_2 \sum_{i=0}^m x_i^2 = \sum_{i=0}^m y_i$$

$$c_0 \sum_{i=0}^m x_i + c_1 \sum_{i=0}^m x_i^2 + c_2 \sum_{i=0}^m x_i^3 = \sum_{i=0}^m x_i y_i$$

$$c_0 \sum_{i=0}^m x_i^2 + c_1 \sum_{i=0}^m x_i^3 + c_2 \sum_{i=0}^m x_i^4 = \sum_{i=0}^m x_i^2 y_i$$

i	x_i	y_i	x_i^2	x_i^3	x_i^4	$x_i y_i$	$x_i^2 y_i$
1	1	2	1	1	1	2	2
2	1	3	1	1	1	3	3
3	2	1	4	8	16	2	4
4	3	4	9	27	81	12	36
Σ	7	10	15	37	99	19	45

$$\begin{pmatrix} 4 & 7 & 15 \\ 7 & 15 & 37 \\ 15 & 37 & 99 \end{pmatrix} \begin{pmatrix} c_0 \\ c_1 \\ c_2 \end{pmatrix} = \begin{pmatrix} 10 \\ 19 \\ 45 \end{pmatrix} \Rightarrow \begin{pmatrix} 4 & 7 & 15 & 10 \\ 7 & 15 & 37 & 19 \\ 15 & 37 & 99 & 45 \end{pmatrix} \sim \begin{pmatrix} 4 & 7 & 15 & 10 \\ 0 & 7 & 43 & 6 \\ 0 & 37 & 99 & 45 \end{pmatrix} \sim \begin{pmatrix} 4 & 7 & 15 & 10 \\ 0 & 7 & 43 & 6 \\ 0 & 43 & 177 & 30 \end{pmatrix}$$

$$c_2 = \frac{72}{32} = 2,25$$

$$c_0 + 7 \cdot 2,25 + 15$$

$$\sim \begin{pmatrix} 4 & 7 & 15 & 10 \\ 0 & 11 & 43 & 6 \\ 0 & 0 & 32 & 72 \end{pmatrix} \Rightarrow 11c_1 + 43 \cdot 2,25 = 6 \quad 4c_0 + 7 + 8,25 + 15 \cdot 2,25 = 10$$

$$c_1 = -8,25$$

$$c_0 = \frac{34}{4} = 8,5$$

$$y = 8,5 - 8,25x + 2,25x^2$$

x	0	0,5	1	1,5	2	2,5	3	3,5	4	3,75
$f(x)$	8,5	4,9375	2,5	1,1875	1	1,9375	4,0	7,7875	11,5	9,2031

