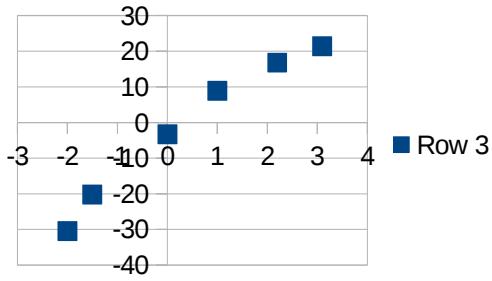
i	1	2	3	4	5	6
x_i	-2	-1,5	0	1	2,2	3,1
$f(x_i)$	-30,5	-20,2	-3,3	8,9	16,8	21,4

x_i^2	4,00	2,25	0,00	1,00	4,84	9,61
x_i^3	-8,00	-3,38	0,00	1,00	10,65	29,79
x_i^4	16,00	5,06	0,00	1,00	23,43	92,35
f(x)*x	61,00	30,30	0,00	8,90	36,96	66,34
f(x)*x²	-122,00	-45,45	0,00	8,90	81,31	205,65

m= **6**



a) Cálculo dos somatórios:

Sum x_i	2,800
Sum x_i^2	21,700
Sum x_i^3	30,064
Sum x_i^4	137,840
Sum f(x)	-6,900
Sum f(x)*x_i	203,500
Sum f(x)*x_i^2	128,416

$$\begin{bmatrix} m & \sum_{i=1}^{m} x_i & \sum_{i=1}^{m} x_i^2 \\ \sum_{i=1}^{m} x_i & \sum_{i=1}^{m} x_i^2 & \sum_{i=1}^{m} x_i^3 \\ \sum_{i=1}^{m} x_i^2 & \sum_{i=1}^{m} x_i^3 & \sum_{i=1}^{m} x_i^4 \end{bmatrix} \cdot \begin{bmatrix} \alpha_1 \\ \alpha_2 \\ \alpha_3 \end{bmatrix} = \begin{bmatrix} \sum_{i=1}^{m} f(x_i) \\ \sum_{i=1}^{m} x_i f(x_i) \\ \sum_{i=1}^{m} x_i^2 f(x_i) \end{bmatrix}$$

b) Resolução do sistema:

6,000	**a1 +**	**2,800**	**a2 +**	**21,700**	**a3=**	**-6,90**
2,800	**a1 +**	**21,700**	**a2 +**	**30,064**	**a3=**	**203,50**
21,700	**a1 +**	**30,064**	**a2 +**	**137,840**	**a3=**	**128,42**

A	6,00	2,80	21,70	**Y**	-6,90
	2,80	21,70	30,06		203,50
	21,70	30,06	137,84		128,42

Det |A|	**0**	**4878,13**

D_x1	-6,90	2,80	21,70	**-9842,368**	**a1=**	**-2,018**
	203,50	21,70	30,06			
	128,42	30,06	137,84			
D_x2	6,00	-6,90	21,70	**55276,724**	**a2=**	**11,332**
	2,80	203,50	30,06			
	21,70	128,42	137,84			
	6,00	2,80	-6,90			

D_x3					
	2,80	21,70	203,50	**-5962,198**	**a3= -1,222**
	21,70	30,06	128,42		

A melhor reta que passa pelos pontos

φ (x) = -2,0177 + 11,3315 x + -1,2222 x^2

Os valores de φ(xi) e os respectivos resíduos (r(xi) = f(xi) – φ (xi))

i	**1**	**2**	**3**	**4**	**5**	**6**
x_i	-2,0000	-1,5000	0,0000	1,0000	2,2000	3,1000
$f(x_i)$	-30,5000	-20,2000	-3,3000	8,9000	16,8000	21,4000
$\varphi(x_i)$	-29,5697	-21,7650	-2,0177	8,0917	16,9962	21,3645
$r(x_i)$	-0,9303	1,5650	-1,2823	0,8083	-0,1962	0,0355
$r^2(x_i)$	0,8655	2,4492	1,6444	0,6534	0,0385	0,0013

soma dos quadrados dos resíduos **5,65227**