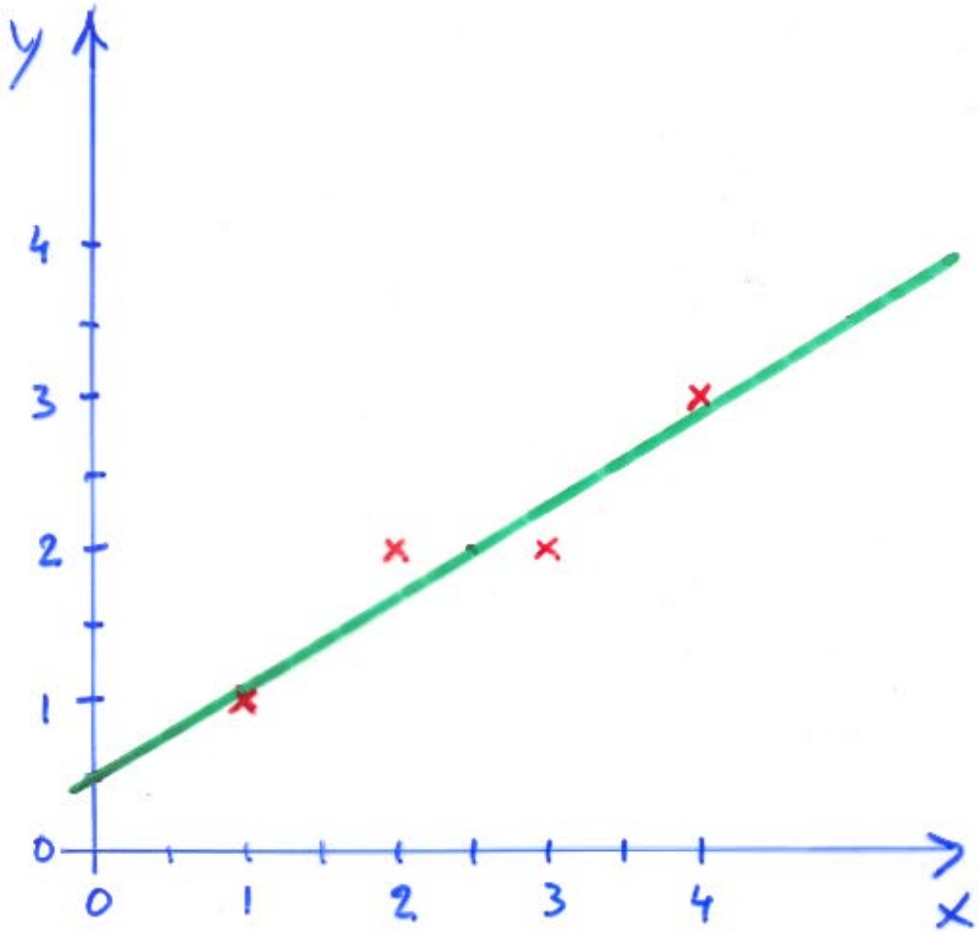
MINSTAKVADRATMETODEN



x	y
1	1
2	2
3	2
4	3

Modell: $y = ax + b$ $\quad a = ?$ $\quad b = ?$

Anpassning av linjen enligt minstakvadratmetoden (MKM)

$ax + b = y$

$$\begin{cases} a + b = 1 \\ 2a + b = 2 \\ 3a + b = 2 \\ 4a + b = 3 \end{cases}$$

$A\begin{bmatrix} a \\ b \end{bmatrix} = b$ med $A = \begin{bmatrix} 1 & 1 \\ 2 & 1 \\ 3 & 1 \\ 4 & 1 \end{bmatrix}$, $b = \begin{bmatrix} 1 \\ 2 \\ 2 \\ 3 \end{bmatrix}$

Normalekv: $A^TA\begin{bmatrix} \hat{a} \\ \hat{b} \end{bmatrix} = A^Tb$

$A^TA = \begin{bmatrix} 30 & 10 \\ 10 & 4 \end{bmatrix}$, $A^Tb = \begin{bmatrix} 23 \\ 8 \end{bmatrix}$

ger $\begin{bmatrix} \hat{a} \\ \hat{b} \end{bmatrix} = \begin{bmatrix} 3/5 \\ 1/2 \end{bmatrix}$

$$\boxed{y = \frac{3x}{5} + \frac{1}{2}}$$

bäst anpassad enl. MKM.