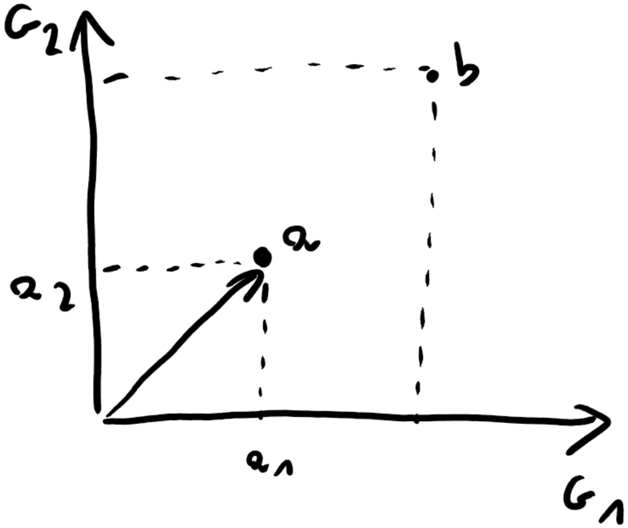
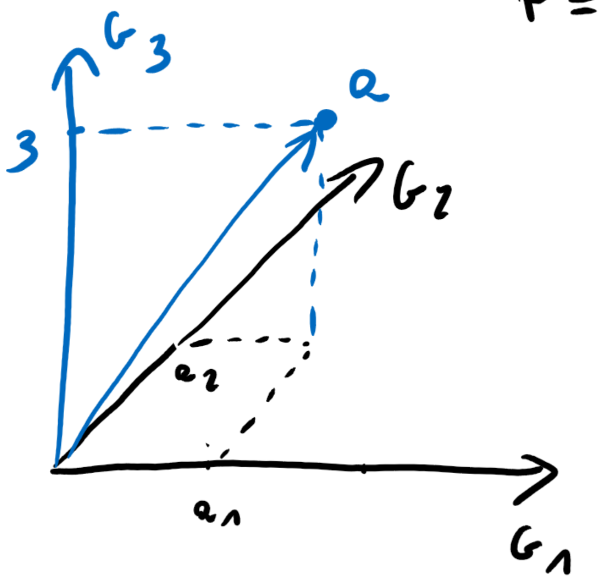
$$P = 2$$



$$a = \begin{bmatrix} a_1 \\ a_2 \end{bmatrix} \quad b = \begin{bmatrix} b_1 \\ b_2 \end{bmatrix}$$

$$d(a,b) = \sqrt{(a_1 - b_1)^2 + (a_2 - b_2)^2}$$



$P = 3$

$$a = \begin{bmatrix} a_1 \\ a_2 \\ a_3 \end{bmatrix} \qquad b = \begin{bmatrix} b_1 \\ b_2 \\ b_3 \end{bmatrix}$$

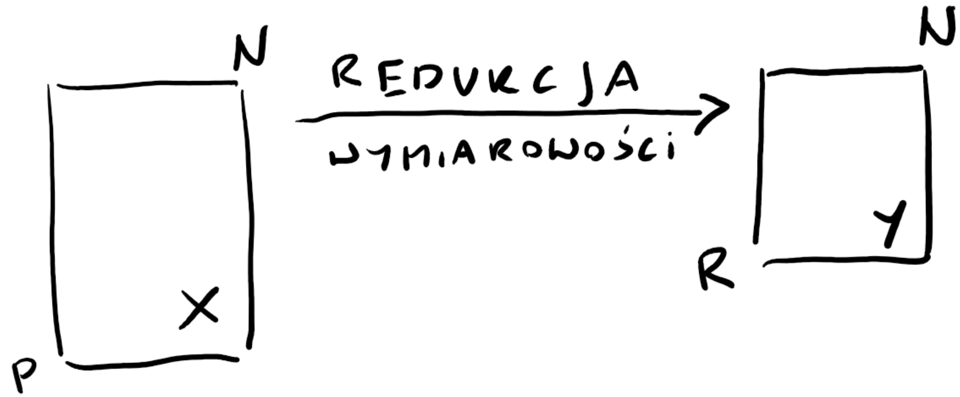
$$d(a,b) = \sqrt{(a_1 - b_1)^2 + (a_2 - b_2)^2 + (a_3 - b_3)^2}$$

$P = 1000$

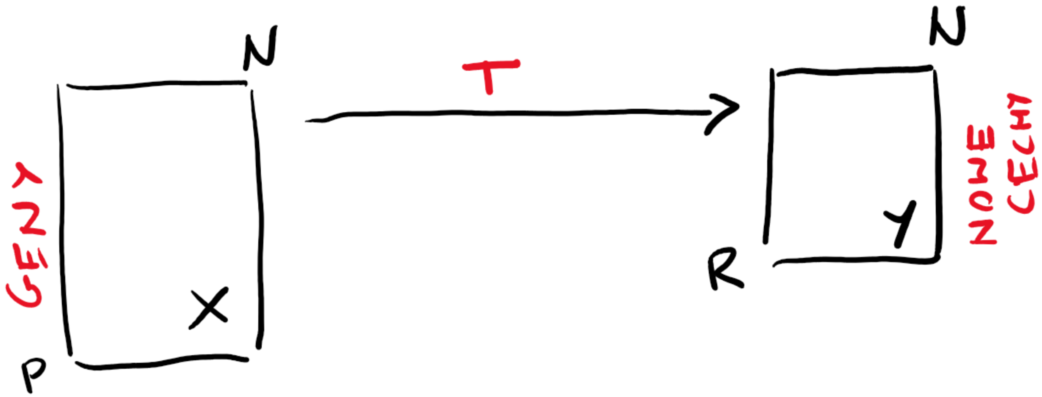
?

$$a = \begin{bmatrix} a_1 \\ a_2 \\ a_3 \\ \vdots \\ a_{1000} \end{bmatrix} \qquad b = \begin{bmatrix} b_1 \\ b_2 \\ b_3 \\ \vdots \\ b_{1000} \end{bmatrix}$$

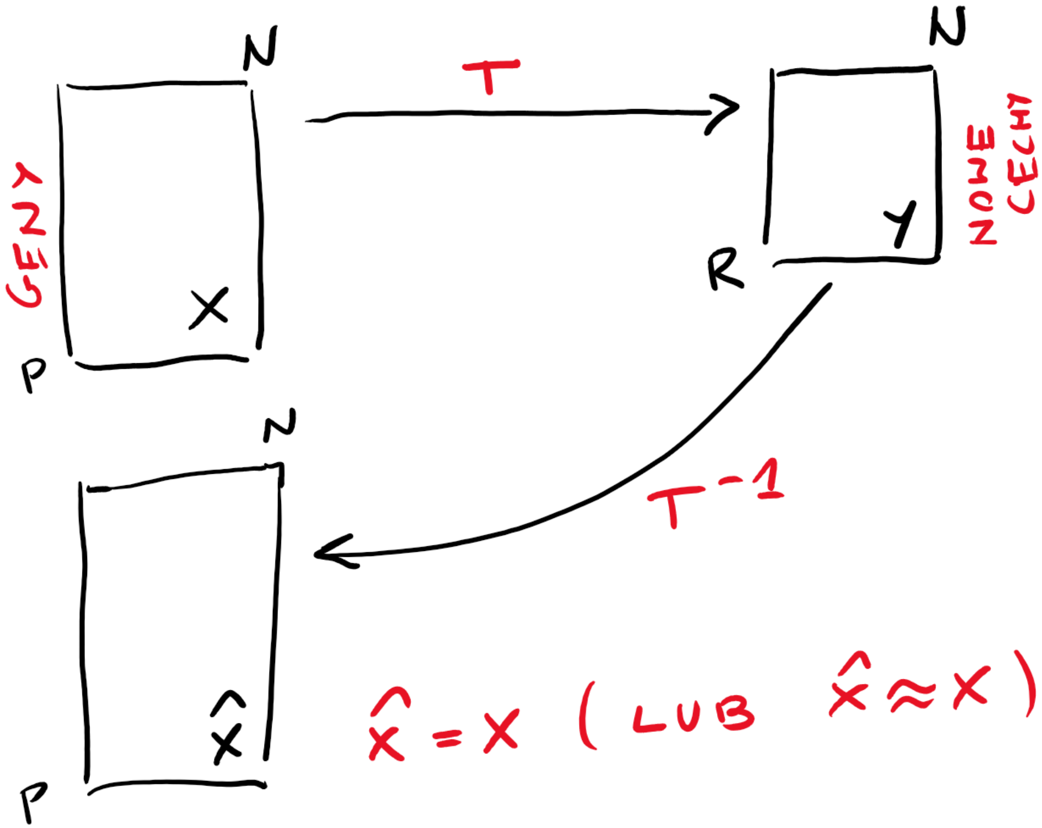
$$d(a,b) = \sqrt{(a_1-b_1)^2 + (a_2-b_2)^2 + (a_3-b_3)^2 + \dots + (a_{1000}-b_{1000})^2}$$



$R \leq P$

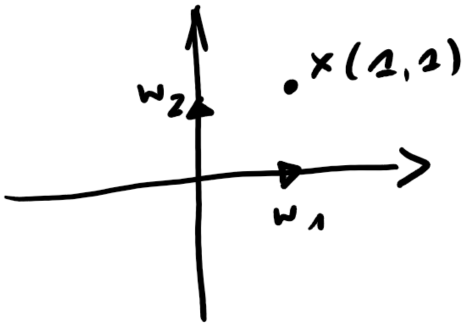


$R \leq P$

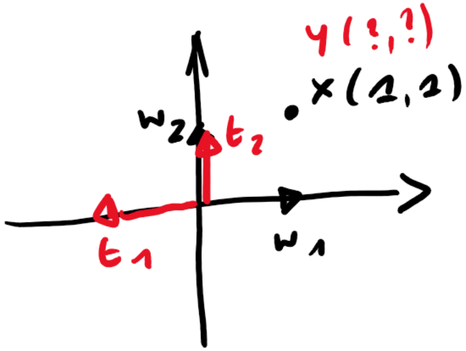


$R \leq P$

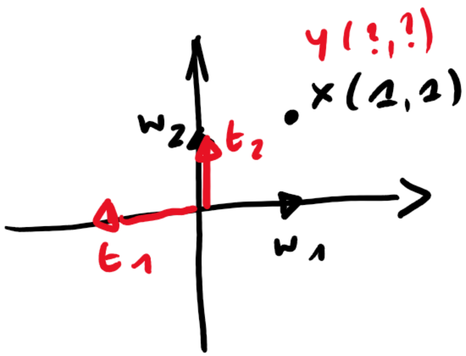
$\hat{X} = X$ (LUB $\hat{X} \approx X$)



$$W = \begin{array}{c} \begin{array}{cc} w_1 & w_2 \end{array} \\ \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \end{array} \qquad x = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$



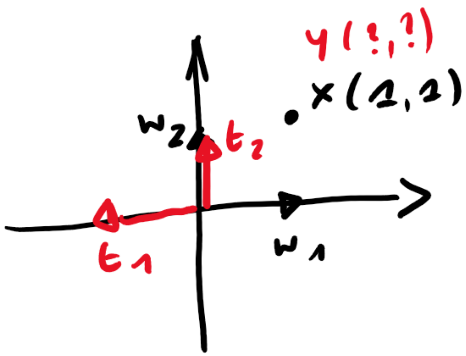
$$W = \begin{array}{cc} w_1 & w_2 \\ \end{array}$$
$$W = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \qquad X = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$



$$W = \begin{array}{cc} w_1 & w_2 \\ \end{array} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \qquad x = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$

$$T = \begin{array}{cc} t_1 & t_2 \\ \end{array} \begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$y = T^T \cdot x = \begin{array}{c} t_1 \\ t_2 \end{array} \begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix} \overset{x}{\begin{bmatrix} 1 \\ 1 \end{bmatrix}} = \begin{bmatrix} -1 \\ 1 \end{bmatrix}$$

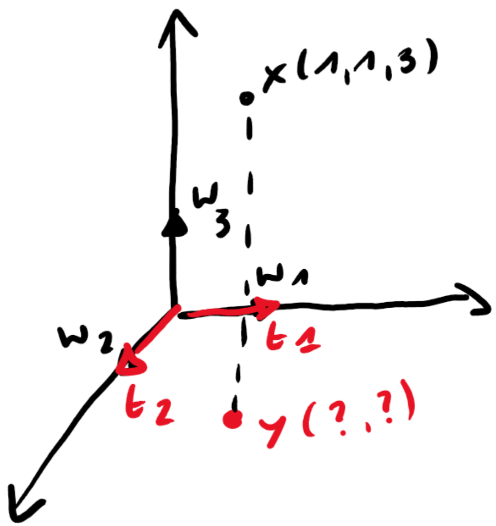


$$W = \begin{array}{cc} w_1 & w_2 \\ \end{array} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \qquad x = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$

$$T = \begin{array}{cc} t_1 & t_2 \\ \end{array} \begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$y = T^T \cdot x = \begin{array}{c} t_1 \\ t_2 \end{array} \begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix} \overset{x}{\begin{bmatrix} 1 \\ 1 \end{bmatrix}} = \begin{bmatrix} -1 \\ 1 \end{bmatrix}$$

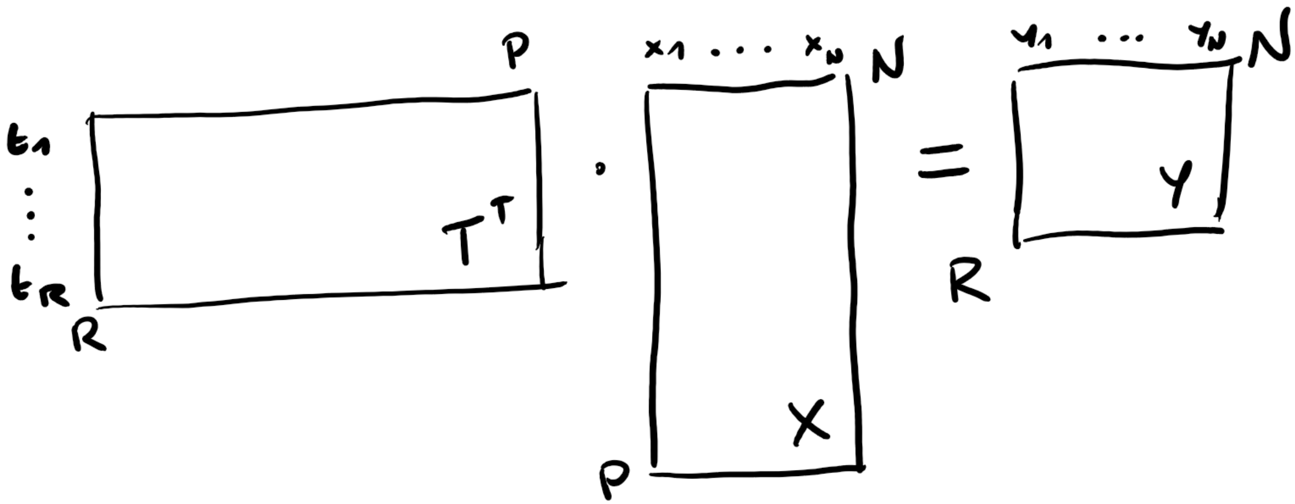
$$Y = T' \cdot X = \begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} x_{11} & x_{21} & \cdots \\ x_{12} & x_{22} & \cdots \end{bmatrix}$$



$$W = \begin{array}{c} \begin{matrix} w_1 & w_2 & w_3 \end{matrix} \\ \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \end{array} \qquad x = \begin{bmatrix} 1 \\ 1 \\ 3 \end{bmatrix}$$

$$T = \begin{array}{c} \begin{matrix} t_1 & t_2 & \cancel{t_3} \end{matrix} \\ \begin{bmatrix} 1 & 0 & \cancel{0} \\ 0 & 1 & \cancel{0} \\ 0 & 0 & \cancel{0} \end{bmatrix} \end{array} = \begin{array}{c} \begin{matrix} t_1 & t_2 \end{matrix} \\ \begin{bmatrix} 1 & 0 \\ 0 & 1 \\ 0 & 0 \end{bmatrix} \end{array}$$

$$y = T^T \cdot x = \begin{array}{c} t_1 \\ t_2 \end{array} \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix} \cdot \begin{bmatrix} 1 \\ 1 \\ 3 \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$



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