

$P(y|x)$
$\parallel$
23

$P(x,y)$

$P(x|y)$

$P(x|GR)$ $P(y|GR)$

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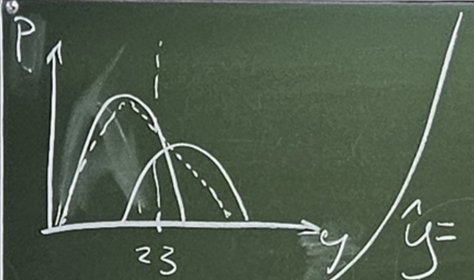
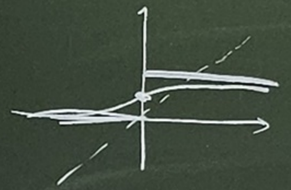
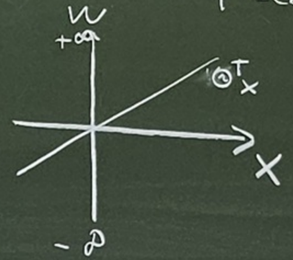


$\hat{y} = \Theta^T x$

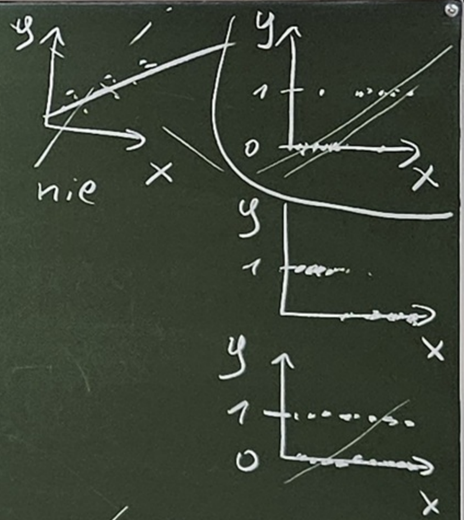
$\hat{y} = \varphi(\Theta^T x)$

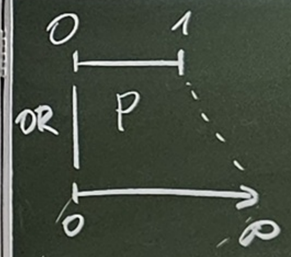
$\varphi(w) = \begin{cases} 1 & \text{dla } \Theta^T x > 0 \\ 0 & \text{w przez} \end{cases}$





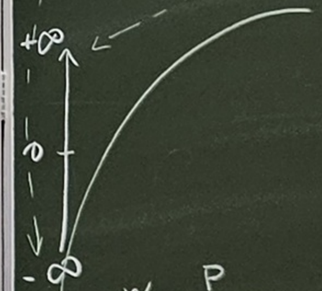
$w = \log_B\left(\frac{p}{1-p}\right)$





$\frac{p}{q}$

$OR = \frac{p}{1-p}$



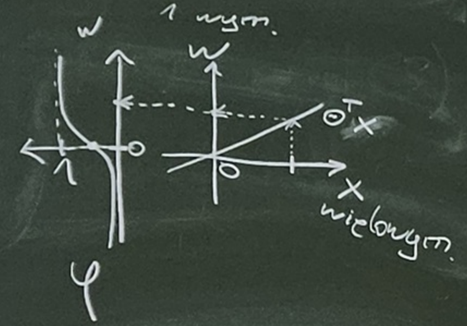
p	OR
0.8 →	4
0.1 →	1/9
0.6 ←	3/2

$B^w = \frac{p}{1-p}$ $\frac{p-1}{p} = B^{-w}$

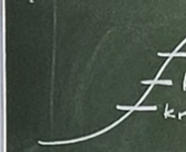
$1 - \frac{1}{p} = B^{-w}$ $\frac{1}{p} = 1 - B^{-w}$ $p = \frac{1}{1-B^{-w}}$

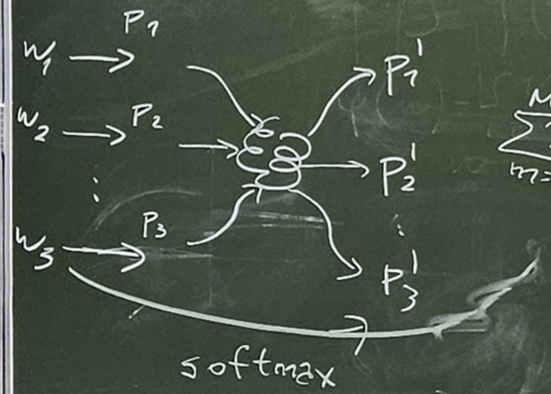
$$X \to \boxed{\Theta^T X} \xrightarrow{w} \boxed{\varphi} \to \hat{y} \equiv p$$

$$p = \frac{1}{1+B^{-w}} \to \frac{1}{1+e^{-w}}$$



Kalibracja modelu
Regresja logist.





$$\sum_{m=1}^{M} p_m' = 1$$

$$\hat{y} = \varphi(\Theta^T x)$$

$$p(y|x)$$

dla $\Theta = [a]$

$$Q = \sum_{i=1}^{N} \left(y_i - \frac{1}{1+e^{-ax}}\right)^2$$

$$\frac{\partial Q}{\partial a} = 0 \to \hat{a}$$

czy to się uda?

$$y_i = \frac{1}{1+e^{-ax}}$$

$$\cancel{\log y_i = \log 1 - \log(1+e^{-ax})}$$

$$1 + e^{-ax} = \frac{1}{y_i}$$

$$e^{-ax} = \frac{1}{y_i} - 1$$

$$-ax = \log\left(\frac{1-y_i}{y_i}\right)$$

$$ax = \mu \to \frac{\sum_{i=1}^{N} x_i \mu_i}{\sum_{i=1}^{N} x_i^2}$$

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