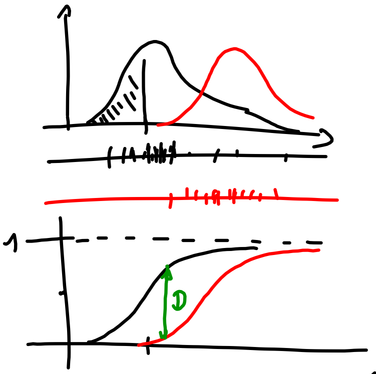
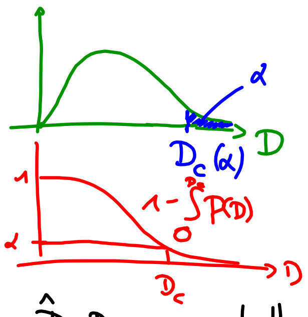
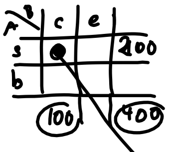
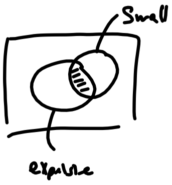




$\hat{D} > D_c \to$ reject H_0





$p(c) = \frac{100}{400}$

$p(s) = \frac{200}{400}$

$p(c) \cdot p(s)$

$P(c \wedge s) = P(c) \cdot P(s)$

A B	b_1	b_2
a_1	0	n
a_2	m	0

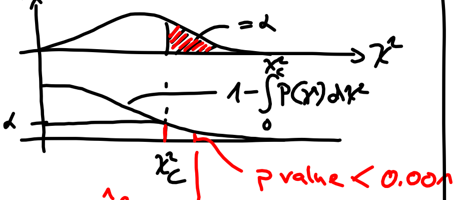
$q = 1 - p$

p = Prob to hit our cell ij

Bernoulli: $\mu = np$

$\sigma^2 = np(1-p) = n \cdot p \cdot q$

$P(\chi^2)$



Data $\to \hat{\chi}^2$

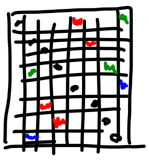
$D = \{\vec{x}_i\}_{i=1,...,N}$

$\vec{x}_i \in \mathbb{R}^{10}$

(x_1, x_2)

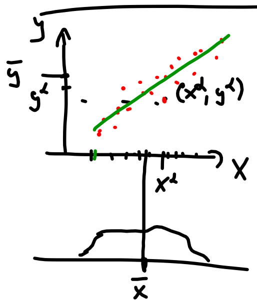
(x_1, x_3)

⋮



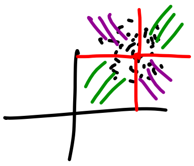
100 test - 10

Linear Correlation



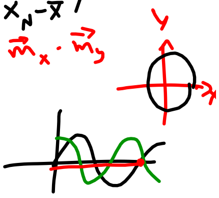
$\boxed{(x_i - \bar{x})(y_i - \bar{y}) > 0}$ if $x_i > \bar{x} \wedge y_i > \bar{y}$

if $x_i < \bar{x} \wedge y_i < \bar{y}$

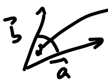


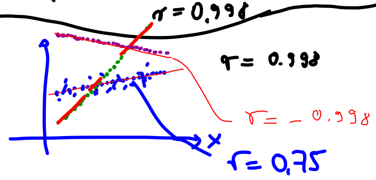
$$\vec{m}_x = \begin{pmatrix} x_1 - \bar{x} \\ x_2 - \bar{x} \\ \vdots \\ x_N - \bar{x} \end{pmatrix}$$

$$r = \sum_i \vec{m}_{x_i} \cdot \vec{m}_{y_i} = \vec{m}_x \cdot \vec{m}_y$$

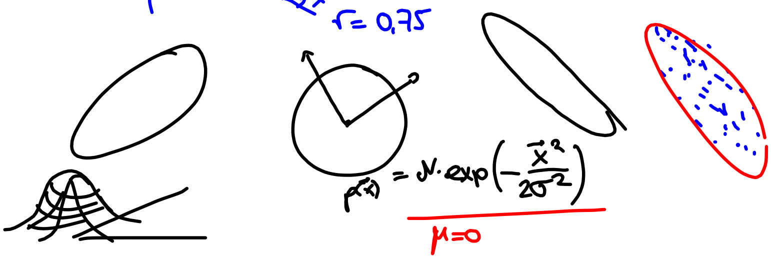


$$\vec{a} \cdot \vec{b} = \sum_{i=1}^{N} a_i b_i = \|\vec{a}\| \cdot \|\vec{b}\| \cdot \cos(\measuredangle \vec{a}, \vec{b})$$





$\to r^2$



$$p(x) = \mathcal{N} \cdot \exp\left(-\frac{x^2}{2\sigma^2}\right)$$

$\mu = 0$