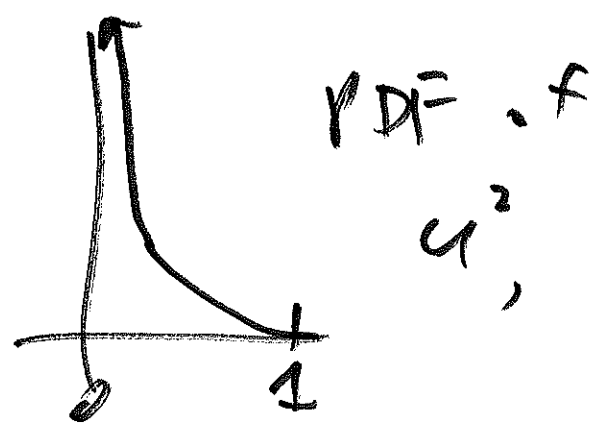


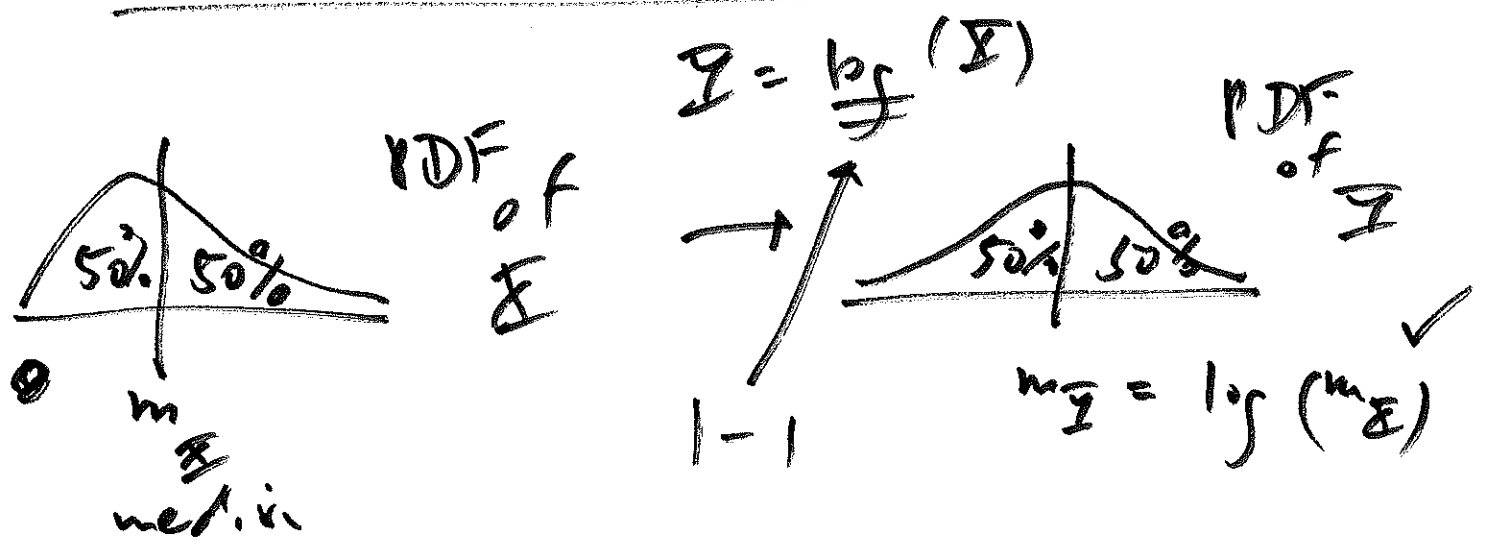
this course,
 time: correlation
 next conditional
 time: expectation,
 variance, utility

$U \sim$ Uniform(0,1)
 AMS 131
 21 May 19
 ①



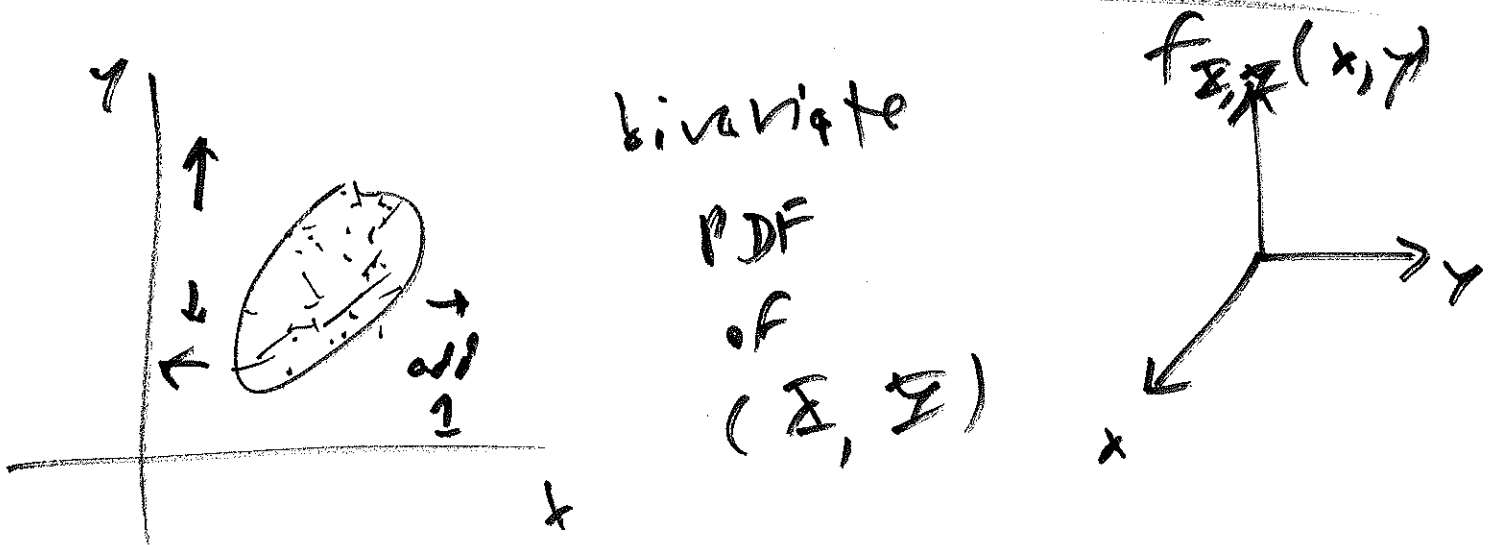
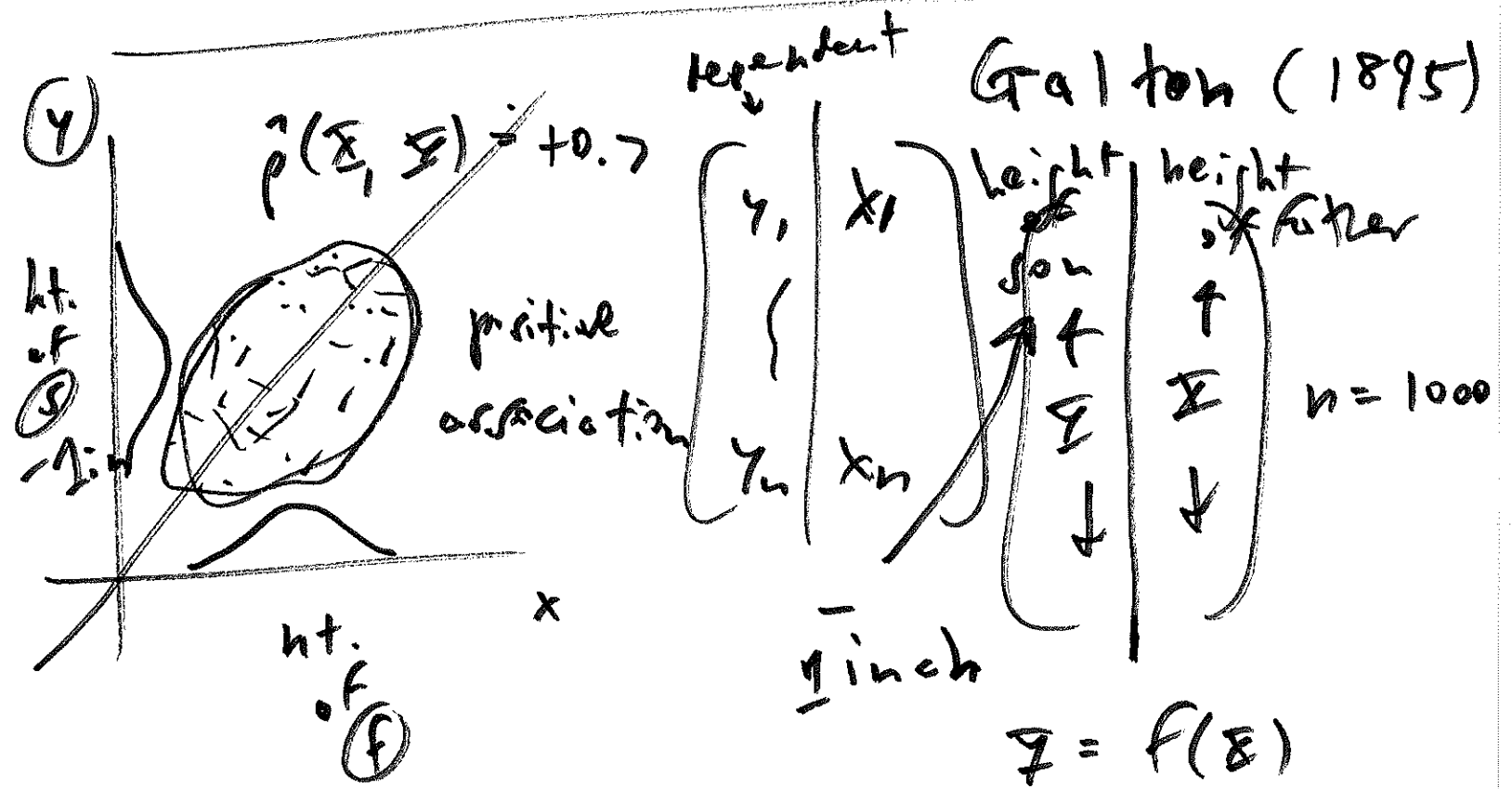
characteristic

function $\phi_X(t) = E(e^{itX})$

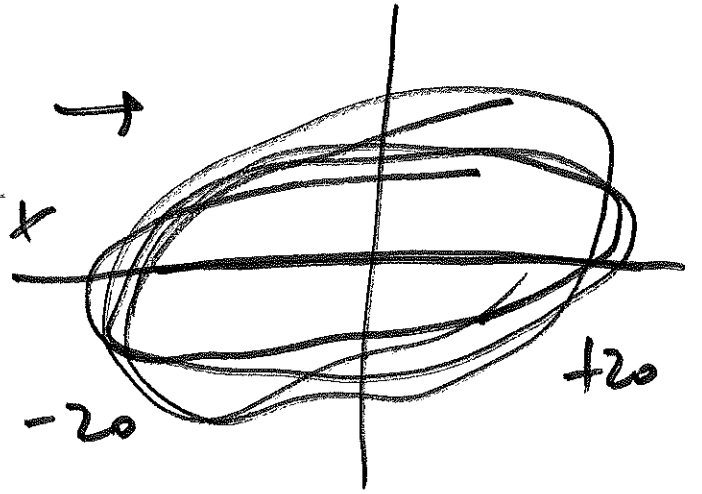
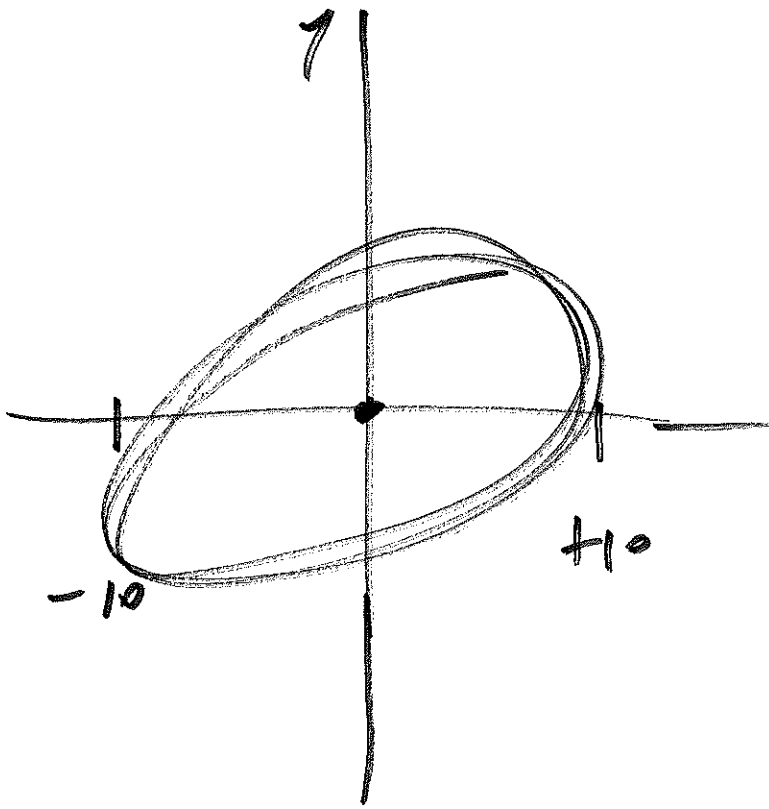


$RMSE = \sqrt{MSE} = \sqrt{E(x - \bar{x})^2}$
 root mean squared error

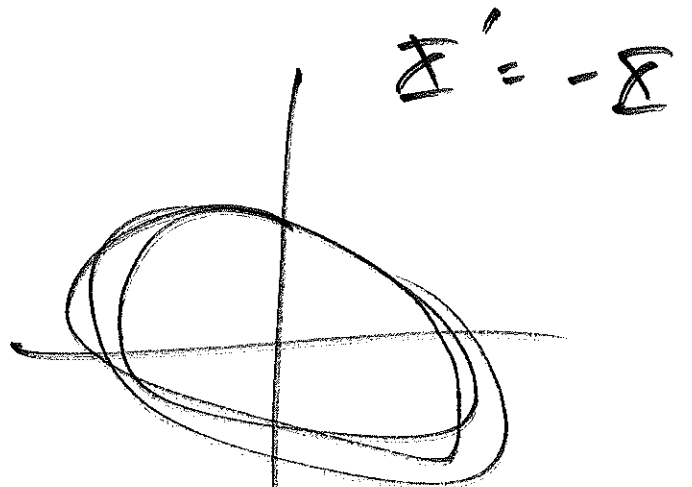
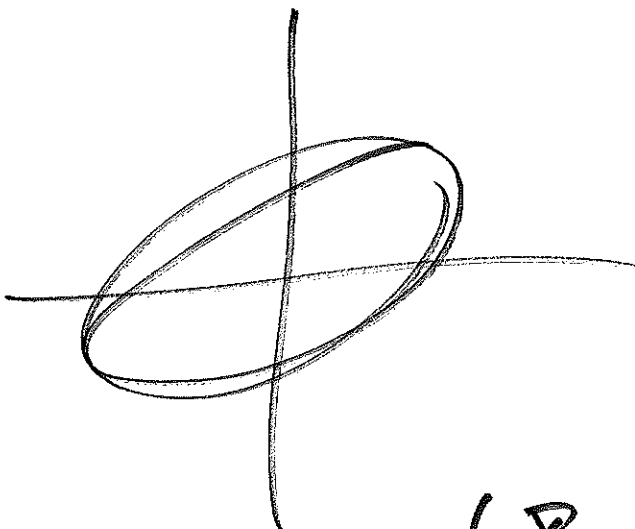
$$C(\mathcal{E}, \mathcal{E}) = E\left((\mathcal{E} - \mu_{\mathcal{E}})^2\right) = \underline{\underline{V(\mathcal{E})}}^{(2)}$$



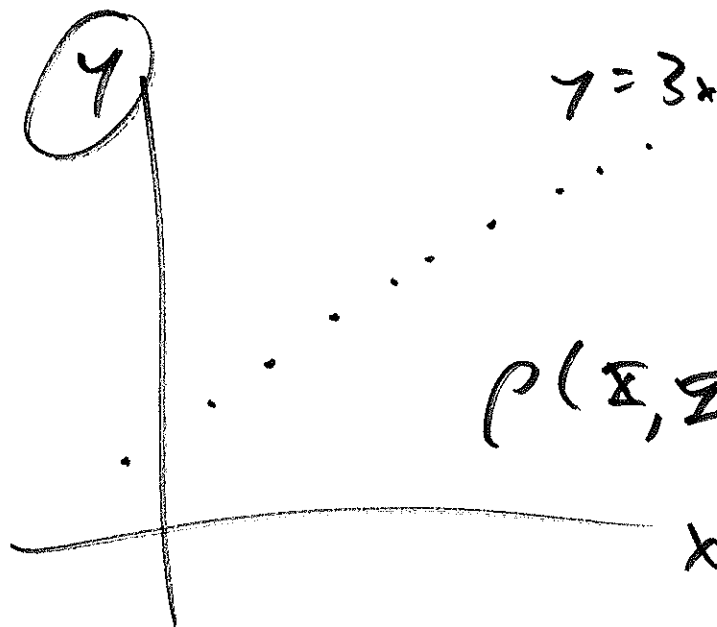
$$\text{Cor } \Sigma' = 2\Sigma \quad (3)$$



$$\rho = \frac{C(\Sigma, \Gamma)}{\sigma_{\Sigma} \sigma_{\Gamma}} = E \left[\left(\frac{\Sigma - \mu_{\Sigma}}{\sigma_{\Sigma}} \right) \left(\frac{\Gamma - \mu_{\Gamma}}{\sigma_{\Gamma}} \right) \right]$$



$$\rho(-\Sigma, \Gamma) = -\rho(\Sigma, \Gamma)$$



$$y = 3x + 2$$

$$y = \underline{\underline{3x + 2}}$$

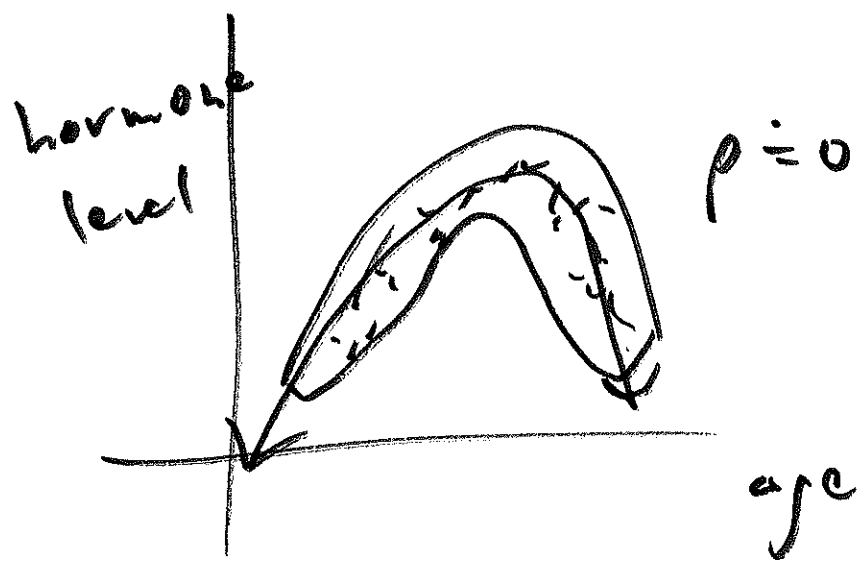
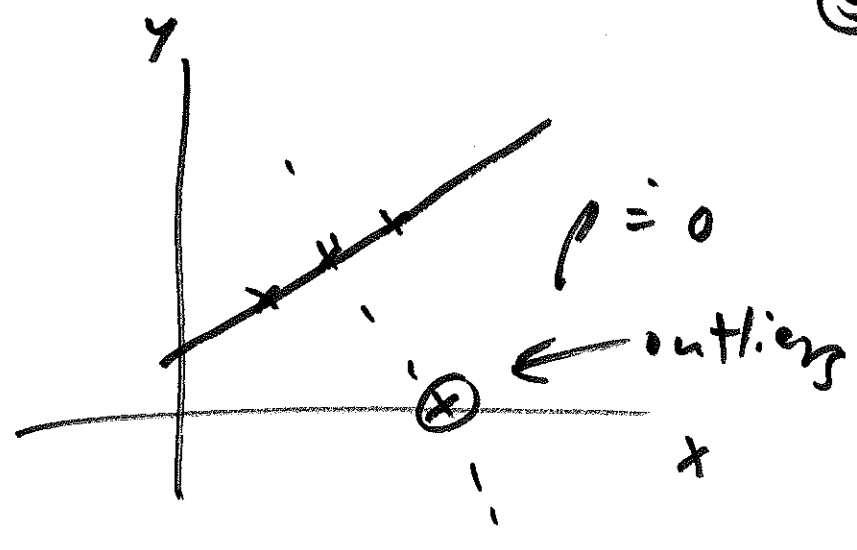
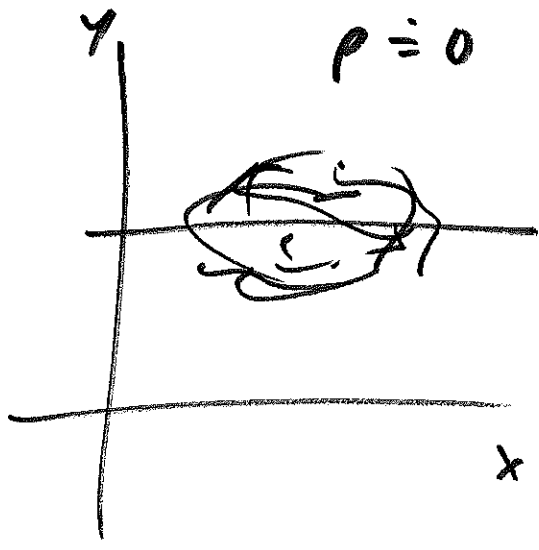
$$\rho(x, y) = +1$$

$$\rho(\overbrace{3x + 2}^{x'}, x) =$$

$$E \left(\frac{x' - \mu_{x'}}{\sigma_{x'}} \right) \left(\frac{x - \mu_x}{\sigma_x} \right)$$

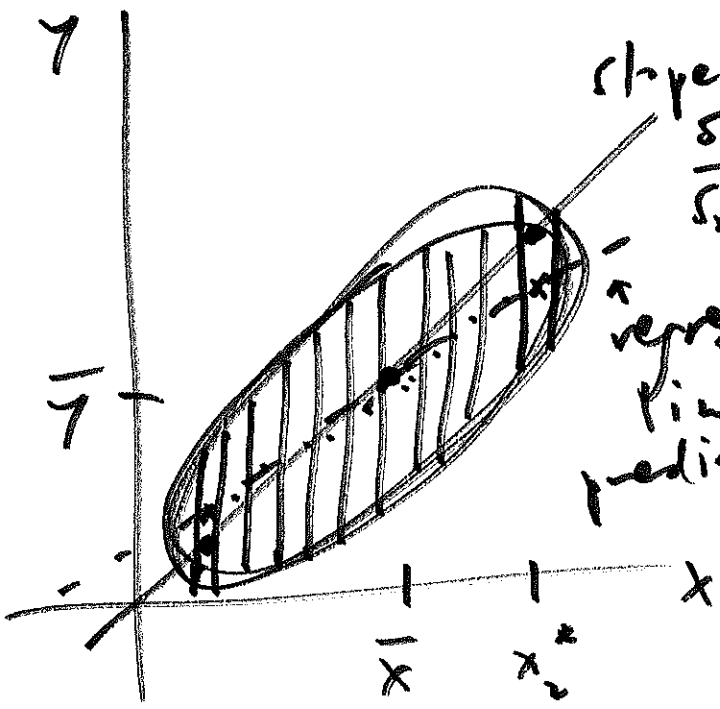
"

$$E \left(\frac{x - \mu_x}{\sigma_x} \right)^2 = +1$$



especially
bad with
small (4)

$$\begin{aligned}
 V(X - Y) &= V(X) + V(-Y) \\
 &\quad + 2C(X, -Y) \\
 &= V(X) + V(Y) \\
 &\quad - 2C(X, Y)
 \end{aligned}$$



slope $\frac{s_y}{s_x}$

regression line for predicting y from x

mean \bar{y} \bar{x}

sd s_y s_x

