STAT 7
21 Nov 19

this time: 2 independent samplers

next time: correlation & regression

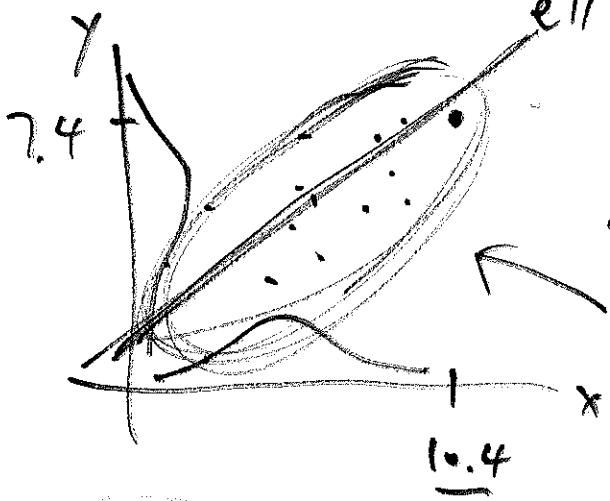
quiz 7 due tonight (1)

quiz 8 due next Tue.

hwk 3 due Sun. night

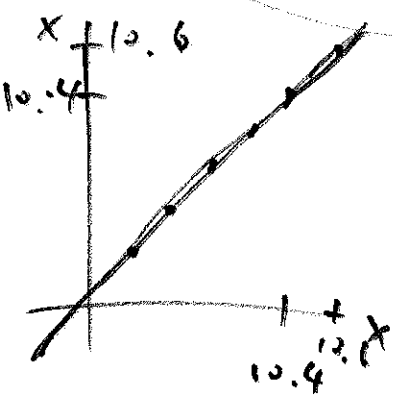
at least 1 make-up lecture: Mon 2 Dec and/or Wed 4 Dec

R-(24) f. (11, 12)



elliptical scatterplot

bivariate normal dist.



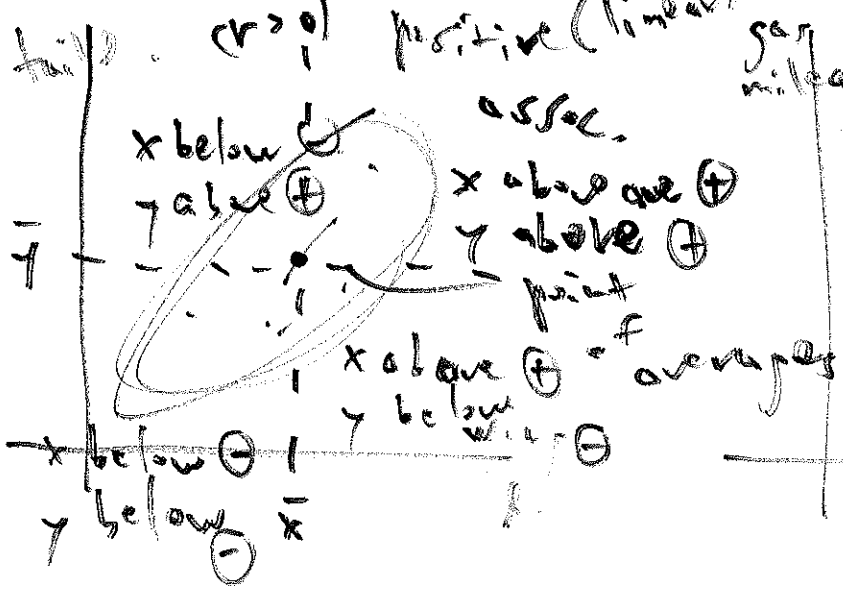
Karl Pearson (Egon & Neyman)

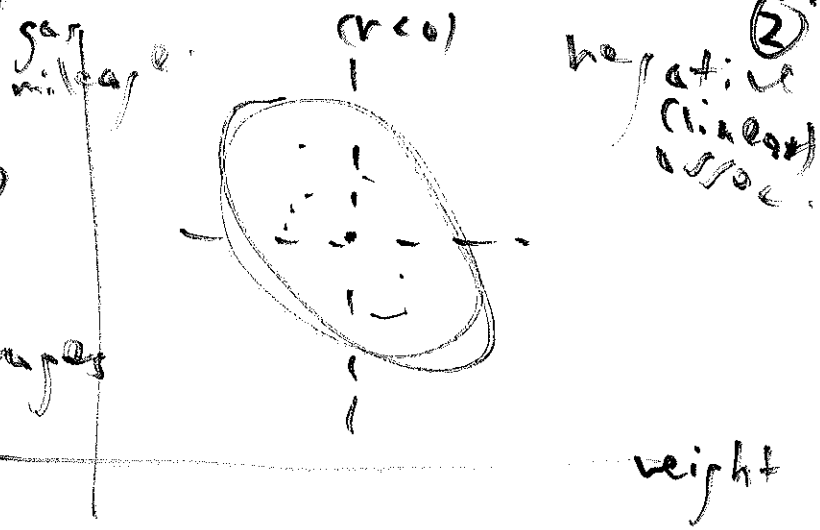
$$\left[\begin{array}{c|c} y_1 & x_1 \\ y_2 & x_2 \\ \vdots & \vdots \\ y_n & x_n \end{array}\right] \quad \uparrow n \downarrow$$

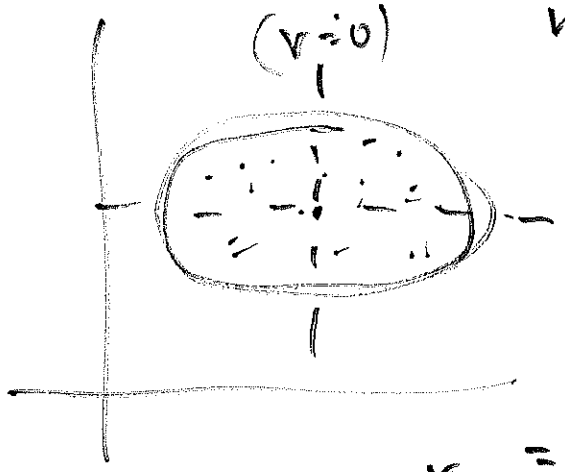
$$Y = \_\_ X \_\_$$

mean $\bar{y}$ $\bar{x}$

s_y^* s_x^*







correlation (coefficient)

$$r = \frac{1}{n} \sum_{i=1}^{n} \left(\frac{x_i - \bar{x}}{s_x^*} \right) \cdot \left(\frac{y_i - \bar{y}}{s_y^*} \right)$$

$$s_x^* = \sqrt{\frac{1}{n} \sum_{i=1}^{n} (x_i - \bar{x})^2} \quad \& \text{ sim. for } s_y^*$$

$$\begin{bmatrix} y_1 \\ \vdots \\ y_n \end{bmatrix}$$

free to vary $\rightarrow$ $\checkmark$ $\checkmark$ x $\leftarrow$ $n = 3$

mean $\bar{y}$

$n - 1$ $\rightarrow$ $\checkmark$ $\vdots$ x $\leftarrow$ n

mean $\bar{y}$

SD $s_y = \sqrt{\frac{1}{n-1} \sum_{i=1}^{n} (y_i - \bar{y})^2}$