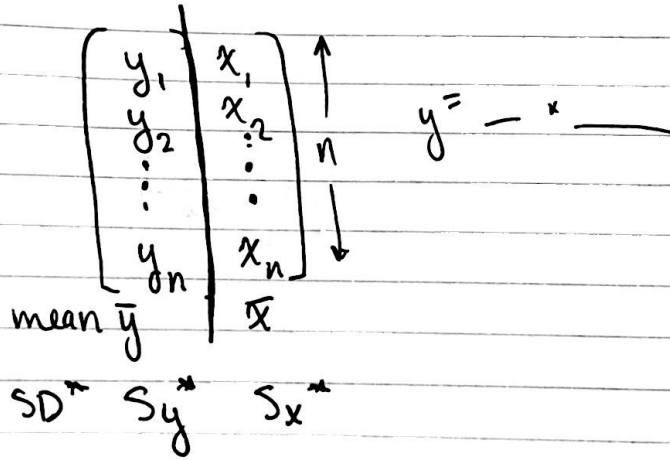
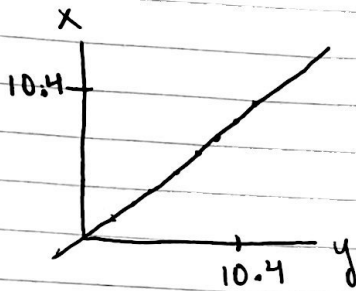
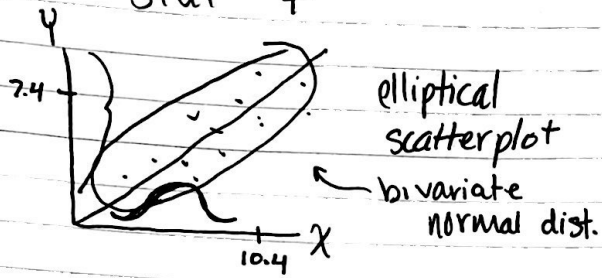


Stat 7

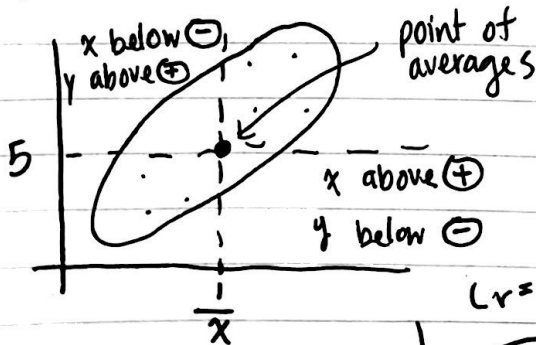
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$SD^* \quad S_y^* \quad S_x^*$

$(r > 0)$

positive linear assoc.

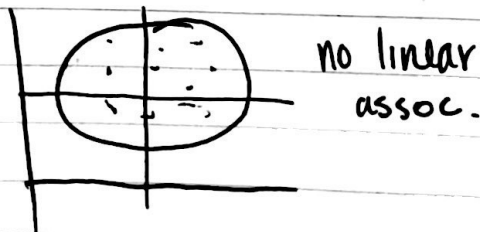


$(r < 0)$

negative linear assoc.



$(r = 0)$



correlation coefficient

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

$$S_x^* = \sqrt{\frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^2} \quad (\text{similarly for } S_y^*)$$

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

mean \bar{y}

free to vary

$$\begin{bmatrix} \checkmark \\ \checkmark \\ x \end{bmatrix}$$

mean \bar{y}

\uparrow
 $n=3$
 \downarrow

$$\begin{bmatrix} \checkmark \\ \vdots \\ \checkmark \end{bmatrix} \textcircled{n}$$

\uparrow
 $n-1$
 \downarrow

mean \bar{y}

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