tut 2

Quiz #1, Version B.

Date: May 30, 2019.
Author: Chi-Kuang Yeh

Q2

a) Note: sample variance (SV) = (sample std (SSD))^2.

$$SV_y = \frac{\sum y_i^2 - n\bar{y}^2}{n-1}, \quad n=30, \quad \bar{y} = \left(\frac{1230.6}{30}\right)$$

$$= \frac{63915 - 30\left(\frac{1230.6}{30}\right)^2}{30-1}$$

$$SSD_y = \sqrt{SV_y} = 21.524$$

b) new-range $= (y_{(30)} - 2) - (y_{(1)} - 2)$

$= y_{(30)} - y_{(1)}$

$= 40$

$=$ old range

c) Recall: $r = \frac{S_{xy}}{\sqrt{S_{xx} S_{yy}}}$

$$S_{xy} = \sum x_i y_i - \frac{1}{n}(\sum x_i)(\sum y_i)$$
$$= 5090 - \frac{1}{30}(90.30)(1230.6)$$
$$= 1385.894$$

$$S_{xx} = \sum x_i^2 - \frac{1}{n}(\sum x_i)^2$$
$$= 449.27 - \frac{1}{30}(90.30)^2$$
$$= 177.467$$

$$S_{yy} = \sum y_i^2 - \frac{1}{n}(\sum y_i)^2$$
$$= 63915 - \frac{1}{30}(1230.6)^2$$
$$= 13435.788$$

$\therefore$ $r = 0.897510709\ldots$

$\simeq 0.898$

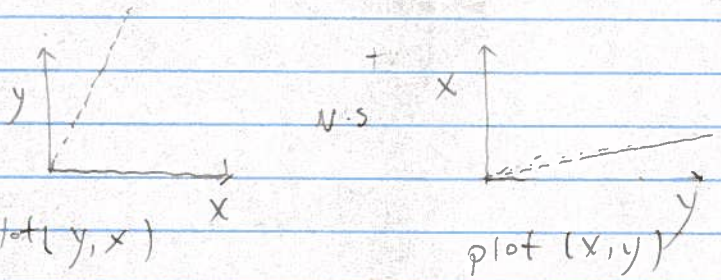
HLBroy

d) adding mean of x, y
↳ correlation (r) unchange

or do calculation with the new dataset.

e) False

e.g



Hilroy