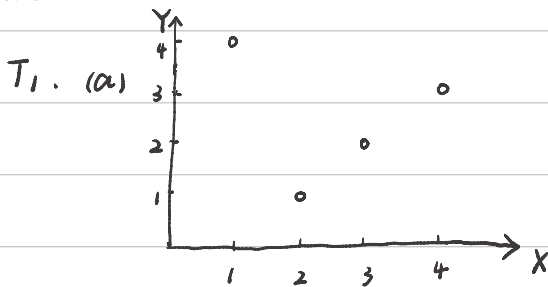


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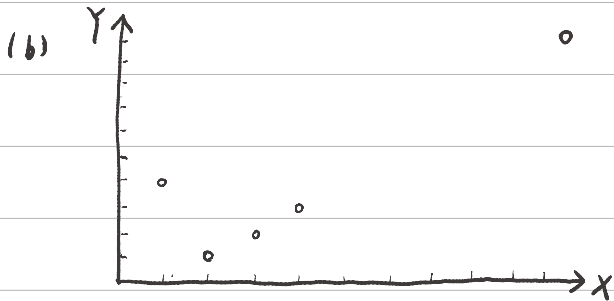


$$SP = (4 + 2 + 6 + 12) - \frac{10 \times 10}{4} = -1$$

$$SS_x = (1 + 4 + 9 + 16) - \frac{10^2}{4} = 5$$

$$SS_y = (16 + 1 + 4 + 9) - \frac{10^2}{4} = 5$$

$$r = \frac{SP}{\sqrt{SS_x \cdot SS_y}} = \frac{-1}{\sqrt{5 \times 5}} = -0.2$$



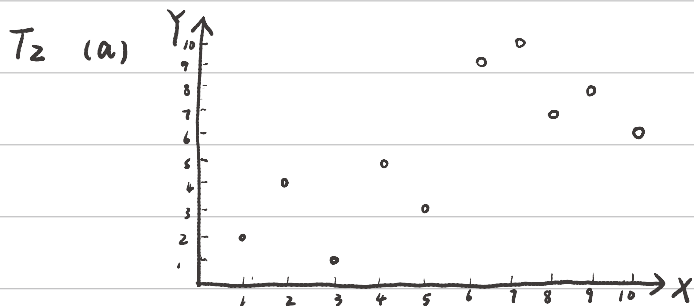
$$SP = (4 + 2 + 6 + 12 + 100) - \frac{20 \times 20}{5} = 44$$

$$SS_x = (1 + 4 + 9 + 16 + 100) - \frac{20 \times 20}{5} = 50$$

$$SS_y = (1 + 4 + 9 + 16 + 100) - \frac{20 \times 20}{5} = 50$$

$$r = \frac{SP}{\sqrt{SS_x \cdot SS_y}} = \frac{44}{50} = 0.88$$

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$$(b) \quad SP = 360 - \frac{55 \times 55}{10} = 57.5$$

$$SS_x = 385 - \frac{55 \times 55}{10} = 82.5$$

$$SS_y = 385 - \frac{55 \times 55}{10} = 82.5$$

$$r = \frac{SP}{\sqrt{SS_x \cdot SS_y}} = \frac{57.5}{82.5} \approx 0.697$$

$$(c) \quad SP = 48 - \frac{15 \times 15}{5} = 3$$

$$SS_x = 55 - \frac{15 \times 15}{5} = 10$$

$$SS_y = 55 - \frac{15 \times 15}{5} = 10$$

$$r = \frac{SP}{\sqrt{SS_x \cdot SS_y}} = \frac{3}{10} = 0.3$$

$$(d) \quad SP = 312 - \frac{40 \times 40}{5} = -8$$

$$SS_x = 330 - \frac{40 \times 40}{5} = 10$$

$$SS_y = 330 - \frac{40 \times 40}{5} = 10$$

$$r = \frac{SP}{\sqrt{SS_x \cdot SS_y}} = \frac{-8}{10} = -0.8$$

(e) 数据增加时  $r$  对

异常值更敏感

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$$T_3. \quad SP = 2458 - \frac{30 \times 498}{6} = -32$$

$$SS_x = 168 - \frac{30 \times 30}{6} = 18$$

$$SS_y = 41406 - \frac{498 \times 498}{6} = 72$$

$$r = \frac{SP}{\sqrt{SS_x \cdot SS_y}} = \frac{-32}{\sqrt{18 \times 72}} \doteq -0.89$$

$$T_4. \quad H_0: \rho = 0 \quad H_1: \rho \neq 0$$

$$SP = 393.906 - \frac{67.21 \times 48.8}{10} = 65.9212$$

$$SS_x = 528.8143 - \frac{67.21^2}{10} = 77.09589$$

$$SS_y = 414.58 - \frac{48.8^2}{10} = 176.436$$

$$r = \frac{SP}{\sqrt{SS_x \cdot SS_y}} = \frac{65.9212}{\sqrt{77.09589 \times 176.436}} \doteq 0.565$$

确定  $\alpha = 0.05$ , 查表得:  $r_{crit} = 0.707$

$\because r < r_{crit}$ .  $\therefore$  接受  $H_0$ , 认为该关系非线性