

Ragus Tri H

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20.TI.B1

1.) Distribusi normal merupakan salah satu jenis distribusi dengan variabel acak yang kontinu. Distribusi normal banyak diterapkan dalam berbagai perhitungan statistika dan pemodelan.

2.) a.  $P(\text{lulus uji}) : P(k_1 \text{ dan } k_2 \text{ dan } k_3)$

$$= 0,95 \times 0,95 \times 0,95 = 0,86$$

b.  $P(\text{tidak lulus uji}) : P(k_1' \text{ dan } k_2' \text{ dan } k_3') + P(k_1 \text{ dan } k_2' \text{ dan } k_3') + P(k_1' \text{ dan } k_2 \text{ dan } k_3')$

$$= (0,95 \times 0,95 \times 0,05 + 0,95 \times 0,05 \times 0,95 + 0,05 \times 0,95 \times 0,95) \\ = 0,14$$

c.  $P(\text{tidak ada yang lulus}) :$

$$P(k_1' \text{ dan } k_2' \text{ dan } k_3')$$

$$= 0,05 \times 0,05 \times 0,05$$

$$= 0,000125$$

$$3.) N = 500 \quad \mu_x = \mu = 165 \quad \sigma = 12 \quad n = 36$$

Note:  $\frac{n}{N} = \frac{36}{500} = 0,072 = 7,2\% > 5\%$  → ulit limit pusat tidak digunakan

$$P(-x < 160 = P(Z < ?))$$

$$F_k = \sqrt{\frac{N-n}{N-1}} = \sqrt{\frac{500-36}{500-1}} = \frac{\sqrt{464}}{499} \cdot \sqrt{0,928} = 0,964$$

$$\text{galat Baku } \sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} \times F_k = \frac{12}{\sqrt{36}} \times 0,964 = 2 \times 0,964 = 1,928$$

$$z = \frac{160 - 165}{1,928} = -2,59$$

$$P(\bar{x} < 160) = P(z < -2,59) = 0,5 - 0,49527 = 0,0048$$

4.a.)

25	40
27	50
30	45
23	42

$$\Sigma x = 105 \quad \Sigma y = 177$$

Diket:  $\alpha = 5\% = 0,05$   
 $\beta = 5\% = 0,05$

$$b = \frac{n \Sigma xy - \Sigma x \Sigma y}{\Sigma x^2 - (\Sigma x)^2} = \frac{4(4666) - (105)(177)}{4(2783) - (105)^2}$$

$$= \frac{18664 - 18585}{11132 - 11025} = \frac{79}{107} = 0,73$$

$$a = \frac{\Sigma y - b \Sigma x}{n}$$

$$= \frac{177 - 0,73(105)}{4} = \frac{177 - 76,65}{4} = \frac{100,35}{4} = 25,08$$

b).

$$r = \frac{n \Sigma xy - \Sigma x \Sigma y}{[n(\Sigma x^2) - (\Sigma x)^2]^{1/2} [n(\Sigma y^2) - (\Sigma y)^2]^{1/2}}$$

$$= \frac{4(4666) - (105)(177)}{[4(2783) - (105)^2]^{1/2} [4(7879) - 31329]^{1/2}}$$

$$= \frac{18664 - 18585}{(107)^{1/2} (107)^{1/2}} = \frac{79}{111,34} = 0,5589$$

Koefisien determinasi  $r^2 = 0,5589 = 55,89\%$

c.) Standar Estimasi

$$\begin{aligned}
 Se &= \sqrt{\frac{\sum Y^2 - a \sum X - b \sum XY}{n-2}} \\
 &= \sqrt{\frac{7879 - (25,08)(177) - (10,73)(4666)}{n-2}} \\
 &= \sqrt{\frac{7879 - (4438,16) - (3406,18)}{2}} \\
 &= \sqrt{\frac{33,66}{2}} = \sqrt{16,83} = 4,102
 \end{aligned}$$

d.) -  $H_0: \beta = 0,05$

$H_a: \beta \neq 0,05$

- uji: Hipotesis = 2 arah

- tingkat signifikansi ( $\alpha$ )

$$\alpha = 0,05 / 2 = 0,025$$

- wilayah kritis

$$df = n - 2 = 4 - 2 = 2$$

$$t(0,025; 2) = \pm 4,303$$

- nilai hitung

$$S_b = Se$$

$$\sqrt{\frac{\sum Y^2 \cdot (\sum X)^2}{n}}$$

$$= \frac{4,102}{\sqrt{2483 - \frac{(105)^2}{4}}}$$

$$= \frac{4,102}{\sqrt{2483 - \frac{11025}{4}}}$$

$$= \frac{4,102}{\sqrt{2483 - 2756,25}}$$

$$= \frac{4,102}{\sqrt{27}} = \frac{4,102}{5,19} = 0,79$$

$$\begin{aligned}
 D.t &= b - \beta / s_b \\
 &= \frac{0,73 - 0,05}{0,079}
 \end{aligned}$$

$$= 0,86$$

terima  $H_0$ , tolak  $H_a$ .



$$5.) \quad n=15; \quad x=6; \quad p=2/5; \quad q=3/5$$

maka

$$P(x, n) = \frac{n!}{(n-x)! \cdot x!} \cdot p^x \cdot q^{n-x}$$

$$P(6, 15) = \frac{15!}{9! \cdot 6!} \times \left(\frac{2}{5}\right)^6 \times \left(\frac{3}{5}\right)^9 =$$

$$= 0,20658$$