例 6-7

$\bar{x} = 16.33$, $S = 4.29$

(1) $1 - \alpha = 0.95$

$\alpha = 0.05$

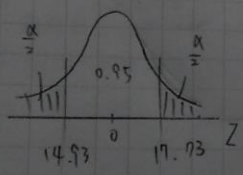
$\frac{\alpha}{2} = 0.025$

$Z_{\frac{\alpha}{2}} = Z_{0.025} = 1.96$

$\bar{x} \pm Z_{\frac{\alpha}{2}} \frac{S}{\sqrt{n}} = 16.33 \pm 1.96 \frac{4.29}{\sqrt{36}}$

$= 16.33 \pm 1.40$

$(14.93, 17.73)$ ☆



(2) $1 - \alpha = 0.90$

$\alpha = 0.10$

$\frac{\alpha}{2} = 0.05$

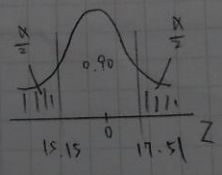
$Z_{\frac{\alpha}{2}} = Z_{0.05} = 1.645$

$\bar{x} \pm Z_{\frac{\alpha}{2}} \frac{S}{\sqrt{n}} = 16.33 \pm 1.645 \frac{4.29}{\sqrt{36}}$

$= 16.33 \pm 1.18$

$(15.15, 17.51)$ ☆

$16.33 - 1.18$, $16.33 + 1.18$



例 6-9 $n = 12$ $\bar{x} = 15291.67$ $S = 197.52$

(1) (12 個燈泡相加) ÷ 12

$= 15291.67$ ☆

(2) $1 - \alpha = 0.90$, $\frac{\alpha}{2} = 0.05$ $\bar{x} \pm t_{\frac{\alpha}{2}}(n-1) \frac{S}{\sqrt{n}} = 15291.67 \pm 1.796 \frac{197.52}{\sqrt{12}}$

$n - 1 = 12 - 1 = 11$

$= 15291.67 \pm 102.41$

$t_{0.05}(11) = 1.796$

$(15189.26, 15394.08)$ ☆

(3) $15394.08 - 15189.26 = 204.82$

$2t_{\frac{\alpha}{2}}(n-1) \frac{S}{\sqrt{n}} = 2 \times t_{0.05}(11) \frac{197.52}{\sqrt{12}}$

$= 2 \times 1.796 \times \frac{197.52}{\sqrt{12}}$

$= 2 \times 102.41$

$= 204.82$

例 6-19

$1-\alpha = 0.95$ $z_{\frac{\alpha}{2}} = z_{0.025} = 1.96$ $e = 0.01$ $\sigma = 0.05$

$n = \left(\frac{z_{\frac{\alpha}{2}}\sigma}{e}\right)^2 = \left(\frac{1.96 \times 0.05}{0.01}\right)^2 = 96.04$

$\therefore n = 97$ $97 - 35 = 62$ 次