習題3.

$n=10$, $\bar{x}=13.63$, $S=6.05$, $n-1=9$

$1-\alpha=0.98$, $\frac{\alpha}{2}=0.01$

$\bar{x} \pm t_{\frac{\alpha}{2}}(n-1)\frac{S}{\sqrt{n}} = 13.63 \pm t_{0.01}(9)\frac{6.05}{\sqrt{10}}$

$= 13.63 \pm 2.821 \times 1.91$

$= 13.63 \pm 5.39$

即 $(8.24, 19.02)$ ☆

習題4. 大樣本(Z)

(1) $n=1200$, $\hat{p}=0.33$, $1-\alpha=0.98$

$0.33 \pm Z_{\frac{\alpha}{2}}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$

$= 0.33 \pm 2.327 \times \sqrt{\frac{0.33 \times 0.67}{1200}}$

$= 0.33 \pm 0.3$ 即 $(0.30, 0.36)$ ☆

(2) $n=820$, $x=650$, $\hat{p}=\frac{650}{820}=0.79$

$1-\alpha=0.95$, $\frac{\alpha}{2}=0.025$

$0.79 \pm 1.96 \times \sqrt{\frac{0.79 \times 0.21}{820}} = 0.79 \pm 1.96 \times 0.014$

$= 0.79 \pm 0.03$

即 $(0.76, 0.82)$ ☆

習題14.

(1) $n=15$, $\bar{x}=1.73$, $S=0.8$ $1-\alpha=0.95$ (t分配)

$t_{\frac{\alpha}{2}}(n-1) = t_{0.025}(14) = 2.145$

$1.73 \pm t_{0.025}(14)\frac{0.8}{\sqrt{15}} = 1.73 \pm 2.145 \times \frac{0.8}{\sqrt{15}}$

$= 1.73 \pm 0.44$

95% 即 $(1.29, 2.17)$

$1-\alpha=0.8$

$1.73 \pm t_{0.10}(14)\frac{0.8}{\sqrt{15}}$

$= 1.73 \pm 1.345\frac{0.8}{\sqrt{15}}$

$= 1.73 \pm 0.28$

80% 即 $(1.45, 2.01)$