Week 6 助教題

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

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

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

$=13.63 \pm 2.821 \times 1.91$

$=13.63 \pm 5.39$

$\Rightarrow (8.24, 19.02)$ ✱

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

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

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

$=0.33 \pm 0.3$

$\Rightarrow (0.30, 0.36)$ ✱

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

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

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

$=0.79 \pm 1.96 \times 0.014$

$=0.79 \pm 0.03$

$\Rightarrow (0.76, 0.82)$ ✱

14、 (1) $n=15$，$\bar{x}=1.73$，$S=0.8$

$1-\alpha=0.95$

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

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

$=1.73 \pm 2.145 \times \frac{0.8}{\sqrt{15}}$

$=1.73 \pm 0.44$

$\Rightarrow (1.29, 2.17)$ ✱

(2) $1.73 \pm t_{0.10}(14)\frac{0.8}{\sqrt{15}}$

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

$=1.73 \pm 0.28$

$\Rightarrow (1.45, 2.01)$ ✱