3. $n=10$, $\bar{x}=13.63$, $s=6.05$

$n-1=9$, $1-\alpha=0.98$, $\frac{\alpha}{2}=0.01)$

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

$= 13.63 \pm 2.821 \times 1.91$

$= 13.63 \pm 5.39$

$(8.24, 19.02)$ #

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

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

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

$= 0.33 \pm 0.3$

$(0.30, 0.36)$ #

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

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

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

$= 0.79 \pm 1.96 \times 0.014$

$= 0.79 \pm 0.03$ $(0.76, 0.82)$
#

14.

(1) $n=15$, $\bar{x}=1.73$, $s=0.8$ $1-\alpha=0.95$ $t_{\frac{\alpha}{2}}(n-1)$

$= t_{0.025}(14) = 2.145$

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

$= 1.73 \pm 0.44$

$(1.29, 2.17)$ #