3. $n=10$ $\bar{x}=13.63$ $s=6.05$ $n-1=9$

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

$\bar{x} \pm t_{\frac{\alpha}{2}}(n-1) \frac{s}{\sqrt{n}}$

$=13.63 \pm t_{0.01}(9) \frac{6.05}{\sqrt{10}}$

$=13.63 \pm 2.821 \times 1.91$

$=13.63 \pm 5.39$

$=(19.02, 8.24)$

14. $n=15$ $\bar{x}=1.73$

$s=0.8$ $1-\alpha=0.95$

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

$t_{0.025}(14)=2.145$

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

$=1.73 \pm 0.44$

$(2.17, 1.29)$

4. (1) $n=1200$ $\hat{p}=0.33$

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

$0.33 \pm 80.01 \sqrt{\frac{0.33 \times 0.67}{1200}}$

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

$=0.33 \pm 0.03$

$=(0.3, 0.36)$

(2)

$1-\alpha=0.8$ $\alpha=0.1$

$1.73 \pm t_{0.1}(14) \frac{0.8}{\sqrt{15}}$

$=1.73 \pm 0.28$

$=(1.45, 2.01)$

(2) $n=800$

$x=6500$

$1-\alpha=0.025$

$\hat{p}=\frac{650}{820}=0.79$

$0.79 \pm t_{0.025} \sqrt{\frac{0.79 \times 0.21}{820}}$

$=0.79 \pm 1.96 \times 0.014$

$=0.79 \pm (0.03)$

$(0.76, 0.82)$