

3.

$$n=10 \quad \bar{x}=13.63 \quad S=6.05 \quad n-1=9 \quad 1-\alpha=0.98 \quad \frac{\alpha}{2}=0.01$$

$$\bar{x} \pm t_{\frac{\alpha}{2}(n-1)} \frac{S}{\sqrt{n}} = 13.63 \pm t_{0.01}(9) \frac{6.05}{\sqrt{10}} = 13.63 \pm 2.821 \times 1.91 = 13.63 \pm 5.39$$

$$(8.24, 19.02)$$

4.

$$(1) n=1200 \quad \hat{p}=0.33 \quad 1-\alpha=0.98 \quad 0.33 \pm z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} = 0.33 \pm \sqrt{\frac{0.33 \times 0.67}{1200}} = 0.33 \pm 0.03$$

$$=(0.30, 0.36)$$

$$(2) n=820 \quad X=650 \quad \hat{p} = \frac{650}{820} = 0.79 \quad 1-\alpha=0.95 \quad \frac{\alpha}{2}=0.025$$

$$0.79 \pm 1.96 \times \sqrt{\frac{0.79 \times 0.21}{820}} = 0.79 \pm 1.96 \times 0.014 = 0.79 \pm 0.03 = (0.76, 0.82)$$

14.

$$(1) n=15 \quad \bar{x}=1.73 \quad S=0.8 \quad 1-\alpha=0.95 \quad t_{\frac{\alpha}{2}(n-1)} = t_{0.025}(14) = 2.145$$

$$1.73 \pm t_{0.025}(14) \frac{0.8}{\sqrt{15}} = 1.73 \pm 2.145 \times \frac{0.8}{\sqrt{15}} = 1.73 \pm 0.44 = (1.29, 2.17)$$

$$(2) 1.73 \pm t_{0.10}(14) \frac{0.8}{\sqrt{15}} = 1.73 \pm 1.345 \frac{0.8}{\sqrt{15}} = 1.73 \pm 0.28 = (1.45, 2.01)$$