

$$1. (1) t_{0.025}(10) = 2.228$$

$$(2) t_{0.95}(8) = 1.86$$

$$(3) \chi^2_{0.05}(12) = 21.026$$

$$(4) \chi^2_{\alpha}(15) \quad \alpha = 0.95$$

$$(5) \chi^2_{0.95}(10) = 3.940$$

$$(6) F_{0.05}(5,8) = 3.69$$

$$(17) F_{0.95}(6,7) \quad \frac{1}{F_{0.05}(7,6)}$$

$$(8) F_{\alpha}(6,6) = 4.28 \quad \alpha = 0.05$$

$$17. (1) \hat{p} = \frac{45}{80} = 0.56$$

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

$$= z_{0.025} \sqrt{\frac{0.56 \times 0.44}{80}}$$

$$= 1.96 \times 0.06 = 0.12$$

$$(3) \hat{p} \pm z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

$$= 0.56 \pm z_{0.05} \sqrt{\frac{0.56 \times 0.44}{80}}$$

$$= 0.56 \pm 1.645 \times 0.06$$

$$= 0.56 \pm 0.1$$

$$= (0.66, 0.46)$$

$$8. \hat{p}_1 = \frac{55}{100} \quad \hat{p}_2 = \frac{60}{100}$$

$$\hat{p}_1 - \hat{p}_2 \pm z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$$

$$= (0.55 - 0.6) \pm z_{0.025} \sqrt{\frac{0.55 \times 0.45}{100} + \frac{0.6 \times 0.4}{100}}$$

$$= -0.05 \pm 1.96 \times 0.07$$

$$= -0.05 \pm 0.14$$

$$= (-0.19, 0.09)$$

$$(c) \hat{p} = 0.5$$

$$(1) \hat{p} = \frac{105}{250} = 0.42$$

$$0.42 \pm z_{0.05} \sqrt{\frac{0.42 \times 0.58}{250}} = 1067.11$$

$$\pm 1068$$

$$= 0.42 \pm 1.645 \times 0.03$$

$$= 0.42 \pm 0.05$$

$$= (0.37, 0.47)$$

$$(2) \hat{p} = 0.3 \quad e = 0.03 \quad 1 - \alpha = 0.95$$

$$e = \frac{\alpha^2}{n} \cdot z \Rightarrow n = \left(\frac{z}{e}\right)^2 \cdot \hat{p}(1-\hat{p})$$

$$n = \left(\frac{1.96}{0.03}\right)^2 \times 0.3 \times 0.7 = 896.37 \approx 897$$

$$(3) \hat{p} = 0.42$$

$$n = \left(\frac{1.96}{0.03}\right)^2 \times 0.42 \times 0.58 = 1039.79$$

$$\pm 1040$$