

9.

$$(1) \bar{x} = \frac{86}{6} = 14.33 \quad n-1=5$$

$$\sigma^2 \text{之點估計值} = \frac{(15^2 + 18^2 + 9^2 + 13^2 + 17^2 + 14^2) - 6 \times 14.33^2}{5}$$

$$= \sqrt{\frac{1284 - 1232.1}{5}} = \sqrt{10.38} = 3.22 \#$$

$$(2) 1-\alpha=0.90 \quad \frac{\alpha}{2}=0.05$$

$$\chi^2_{0.05}(5) = 11.07$$

$$\chi^2_{1-0.05}(5) = \chi^2_{0.95}(5) = 1.15$$

$$\left[ \sqrt{\frac{5 \times 10.38}{\chi^2_{0.05}(5)}}, \sqrt{\frac{5 \times 10.38}{\chi^2_{0.95}(5)}} \right] = \left[ \sqrt{\frac{51.9}{11.07}}, \sqrt{\frac{51.9}{1.15}} \right]$$

$$= (2.17, 6.72) \#$$

20.

$$n_1 = 9 \quad \bar{x} = 7.67 \quad s_1 = 9.27$$

$$n_2 = 9 \quad \bar{y} = 6.78 \quad s_2 = 21.15$$

$$(1) \sigma_1^2 \neq \sigma_2^2$$

$$v = \frac{\left( \frac{9.27^2}{9} + \frac{21.15^2}{9} \right)}{\frac{\left( \frac{9.27^2}{9} \right)^2}{8} + \frac{\left( \frac{21.15^2}{9} \right)^2}{8}} = 10.96$$

$\therefore \mu_1 - \mu_2 \pm 95\%$  信賴區間

$$(7.67 - 6.78) \pm t_{0.025}(11) \sqrt{\frac{9.27^2}{9} + \frac{21.15^2}{9}}$$

$$= 0.89 \pm 2.201 \times 7.70$$

$$= 0.89 \pm 16.95$$

$$= (-16.06, 17.84) \#$$

$$(2) 1 - \alpha = 0.90 \quad \chi^2_{\frac{\alpha}{2}}(n-1) = \chi^2_{0.05}(8) = 15.51$$

$$\chi^2_{1-\frac{\alpha}{2}}(n-1) = \chi^2_{0.95}(8) = 2.73$$

$\sigma_1 \pm 90\%$  信賴區間

$$\left( \sqrt{\frac{8 \times 9.27^2}{\chi^2_{0.05}(8)}}, \sqrt{\frac{8 \times 9.27^2}{\chi^2_{0.95}(8)}} \right) = (6.66, 15.87) \#$$

(3)  $1-\alpha=0.90$   $F_{0.05}(8,8)=3.44$

$$F_{0.95}(8,8)=0.29$$

$$\left[ \frac{9.27^2}{21.15^2} \times \frac{1}{3.44}, \frac{9.27^2}{21.15^2} \times \frac{1}{0.29} \right]$$

$$= (0.06, 0.66) \#$$