9. 1)

$$S=\sqrt{\frac{\sum_{i=1}^{n}(x_i-\bar{x})^2}{n-1}}=\sqrt{\frac{\sum x_i^2-n\bar{x}^2}{n-1}}$$

$$=\sqrt{\frac{12.84-6\times 1.4.33^2}{5}}$$

$$=\sqrt{10.38}=3.22\#$$

12) $1-\alpha=0.9 \quad \frac{\alpha}{2}=0.05 \quad n-1=5$

$$\chi^2_{\frac{\alpha}{2}}(n-1)=\chi^2_{0.05}(5)=11.07$$

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

$$\left(\sqrt{\frac{(n-1)S^2}{\chi^2_{\frac{\alpha}{2}}(n-1)}},\sqrt{\frac{(n-1)S^2}{\chi^2_{1-\frac{\alpha}{2}}(n-1)}}\right)=\left(\sqrt{\frac{5\times 10.38}{11.07}},\sqrt{\frac{5\times 12.38}{1.15}}\right)$$

$$=(2.17,6.12)$$

20. $n_1=9 \quad \bar{x}=7.67 \quad S_1=9.27$

$n_2=9 \quad \bar{y}=6.78 \quad S_2=21.15$

$$V=\frac{\left(\frac{S_1^2}{n_1}+\frac{S^2}{n_2}\right)^2}{\frac{\left(\frac{S_1}{n_1}\right)^2}{(n_1-1)}+\frac{\frac{S_2^2}{n_2}}{(n_2-1)}} \qquad V=\frac{\left(\frac{9.27^2}{9}+\frac{21.15^2}{9}\right)^2}{\frac{\left(\frac{9.27^2}{9}\right)^2}{8}+\frac{\left(\frac{21.15^2}{9}\right)^2}{8}}=10.96\doteq 11$$

(1)

$$\bar{x}-\bar{y}\pm t_{\frac{\alpha}{2}}(v)\sqrt{\frac{S_1^2}{n_1}+\frac{S_2^2}{n_2}}=0.67-6.78\pm t_{0.05}(11)\sqrt{\frac{9.27^2}{9}+\frac{21.15^2}{9}}$$

$$=-0.89\pm 2.20\times 7.70$$

$$=-0.89\pm 16.95\#$$

(2)

$$\left(\sqrt{\frac{8\times 9.27^2}{\chi^2_{0.05}(8)}},\sqrt{\frac{8\times 9.27^2}{\chi^2_{0.95}(8)}}\right)=\left(\sqrt{\frac{687.46}{15.5}},\sqrt{\frac{687.46}{2.73}}\right)$$

$$=(6.66,15.87)\#$$

(3)

$$\left(\frac{S_1^2}{S_2^2}\times\frac{1}{F_{\frac{\alpha}{2}}(n_1-1,n_2-1)}\right),\ \frac{S_1^2}{S_2^2}\times\frac{1}{F_{1-\frac{\alpha}{2}}(n_1-1,n_2-1)}$$

$$=\left(\frac{9.27^2}{21.15^2}\times\frac{1}{5.04},\ \frac{9.27^2}{21.15^2}\times\frac{1}{\frac{1}{5.04}}\right)$$

$$=(0.06,0.86)\#$$