6.19

$1-\alpha=0.95$, $Z_{\frac{\alpha}{2}}=Z_{0.025}=1.96$

$e=0.01$, $s=0.05$

$$n=\left(\frac{Z_{\frac{\alpha}{2}}S}{e}\right)=\left(\frac{1.96\times0.05}{0.01}\right)^2=96.04$$

$n=97$

$97-35=62$

6.7

設μ表示消費者更換手機之平均時間

$\bar{x}=16.33$, $s=4.29$

(1) $1-\alpha=0.95$, $\frac{\alpha}{2}=0.025$

$Z_{\frac{\alpha}{2}}=Z_{0.025}=1.96$

$\bar{x}\pm Z_{\frac{\alpha}{2}}\frac{s}{\sqrt{n}}$

$=16.33\pm1.96\frac{4.29}{\sqrt{36}}$

$=16.33\pm1.4$

$(14.93, 17.73)$

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

$Z_{\frac{\alpha}{2}}=Z_{0.05}=1.645$

$\bar{x}\pm Z_{\frac{\alpha}{2}}\frac{s}{\sqrt{n}}$

$=16.33\pm1.645\frac{4.29}{\sqrt{36}}$

$=16.33\pm1.18$

$(15.15, 17.51)$

6.9

設M為新品牌省電燈泡之平均壽命

$n=12$

$$\bar{x}=\frac{(15000+15100+15000+15200+15500+15400+15600+15500+15300+15200+15300+15400)}{12}$$

$$=\frac{183500}{12}\fallingdotseq 15291.67$$

$$S=\sqrt{\Sigma(x_i-\bar{x})^2/(n-1)}=197.52$$

(1) M之點估計為 $\bar{x}=15291.67$

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

自由度為 $n-1=12-1=11$

$t_{0.05}(11)=1.796$

$$\bar{x}\pm t_{\frac{\alpha}{2}}(n-1)\frac{S}{\sqrt{n}}=15291.67\pm 1.796\frac{197.52}{\sqrt{12}}$$

$$=15291.67\pm 102.41$$

(15189.26, 15394.08)

(3) $15394.08-15189.26=204.82$