

P241.1

$$\bar{X} = 31.1, n = 6$$

$$H_0: \mu = 30, H_1: \mu \neq 30$$

$$P(|\frac{\bar{X} - \mu_0}{\sigma/\sqrt{n}}| > U_{\frac{\alpha}{2}}) = 0.05, U_{\frac{\alpha}{2}} = 1.96.$$

$$\frac{\bar{X} - \mu_0}{\sigma/\sqrt{n}} = 2.46 > U_{\frac{\alpha}{2}} \therefore \mu \neq 30, H_1 \text{ 成立, 拒绝 } H_0.$$

P241.2

$$H_0: \mu = \mu_0 = 6.5 \text{ cm. } H_1: \mu \neq \mu_0, \bar{X} = 6.48, n = 15$$

$$P(|\frac{\bar{X} - \mu_0}{\sigma/\sqrt{n}}| > U_{\frac{\alpha}{2}}) = 0.05 \Rightarrow \frac{\bar{X} - \mu_0}{\sigma/\sqrt{n}} = \frac{6.48 - 6.5}{0.2/\sqrt{15}} = -0.27 \therefore H_0 \text{ 成立, 正常生产.}$$

P241.3.

$$\bar{X} = 10000 \text{ h, } n = 100, X \sim N(\mu, 40^2)$$

$$H_0: \mu \geq 10100 \text{ h. } H_1: \mu < 10100$$

$$\frac{\bar{X} - 10100}{\sigma/\sqrt{n}} \geq \frac{\bar{X} - \mu}{\sigma/\sqrt{n}} \quad P(\frac{\bar{X} - \mu}{\sigma/\sqrt{n}} < -U_{\alpha}) = 0.005, U_{\alpha} = 2.575.$$

$$\therefore P(\frac{\bar{X} - 10100}{\sigma/\sqrt{n}} < -U_{\alpha}) \leq 0.005, \frac{\bar{X} - 10100}{\sigma/\sqrt{n}} = -25 \therefore \text{不合格.}$$