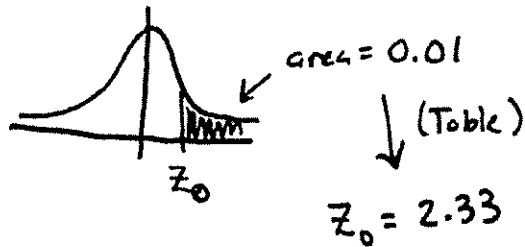


§72 #31

$$\left[\begin{array}{l} n=50 \\ \bar{x}=31 \\ \sigma=2.5 \\ \alpha=0.01 \end{array} \right]$$

claim $\left\{ \begin{array}{l} H_0: \mu \leq 30 \\ H_a: \mu > 30 \end{array} \right.$
↓
right tail



rejection region:

$$\boxed{Z > 2.33}$$

test statistic:

$$\left[\begin{array}{l} Z = \frac{\bar{x} - \mu}{\sigma_{\bar{x}}} \\ \sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} \end{array} \right]$$

$$\sigma_{\bar{x}} = \frac{2.5}{\sqrt{50}} = 0.3535$$

$$\boxed{Z = \frac{31 - 30}{0.3535} = 2.82} > 2.33 \quad (\text{in RR})$$

Therefore we reject H_0 .

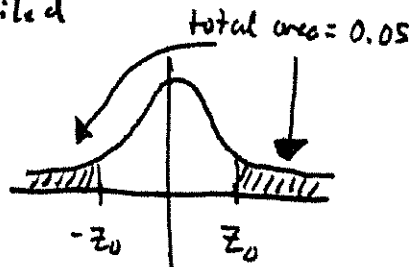
"There is ^{sufficient} evidence to support the claim."

§7.2 #34

claim $\rightarrow H_0: \mu = 48.8$
 $H_a: \mu \neq 48.8$

$$\left[\begin{array}{l} \alpha = 0.05 \\ n = 120 \\ \bar{x} = 49.5 \\ \sigma = 3.6 \end{array} \right]$$

two-tailed



area of each: $\frac{\alpha}{2} = 0.025$

table $\rightarrow -z_0 = -1.96$

$z_0 = 1.96$

rejection region

$z > 1.96$ or $z < -1.96$

test statistic:

$$\left[z = \frac{\bar{x} - \mu}{\sigma_{\bar{x}}} \quad \sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} \right]$$

$$\sigma_{\bar{x}} = \frac{3.6}{\sqrt{120}} = 0.3286$$

$$z = \frac{49.5 - 48.8}{0.3286} = 2.1302$$

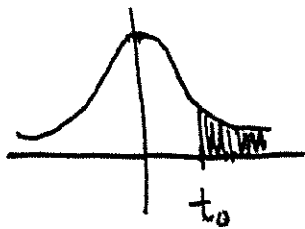
> 1.96
 \downarrow
reject H_0

"There is sufficient evidence to reject the claim."

§7.3 # 17

claim \rightarrow $\left\{ \begin{array}{l} H_0: \mu \leq 5000 \\ H_a: \mu > 5000 \end{array} \right.$

right tail



$$t_0 = 2.719$$



rejection region
 $t > 2.719$

$$\left[\begin{array}{l} \alpha = 0.05 \\ n = 37 \\ \bar{x} = 5122 \\ s = 625 \end{array} \right] \rightarrow \text{d.f.} = 36$$

Test statistic:

$$t = \frac{\bar{x} - \mu}{(s/\sqrt{n})}$$

$$\left[\begin{array}{l} \frac{s}{\sqrt{n}} = \frac{625}{\sqrt{37}} = 102.749 \\ t = \frac{5122 - 5000}{102.749} \\ = 1.187 \end{array} \right]$$

fail to reject H_0



"There is not sufficient evidence to support the claim."