例 7.8.

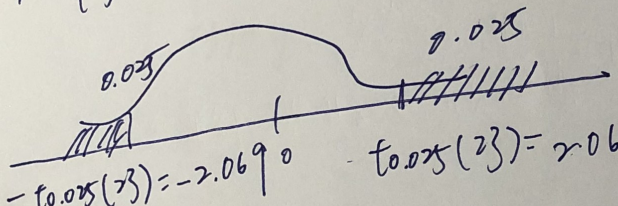
(1) $H_0: \mu_1 - \mu_2 = 0$, $H_1: \mu_1 - \mu_2 \neq 0$.

(2) $\alpha = 0.05$

(3) $n = \dfrac{\left(\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}\right)^2}{\frac{\left(\frac{S_1^2}{n_1}\right)^2}{n_1 - 1} + \frac{\left(\frac{S_2^2}{n_2}\right)^2}{n_2 - 1}} = \dfrac{\left(\frac{4.82^2}{12} + \frac{8.54^2}{15}\right)^2}{\frac{\left(\frac{4.82^2}{12}\right)^2}{12-1} + \frac{\left(\frac{8.54^2}{15}\right)^2}{15-1}} = 22.173 \doteq 23.$

棄卻域 $C = \{|T| > t_{\frac{\alpha}{2}}(n)\} = \{|T| > t_{0.025}(23)\} = \{|T| > 2.069\}$

(4) $T = \dfrac{78.25 - 72.60}{\sqrt{\frac{4.82^2}{12} + \frac{8.54^2}{15}}} = 2.167$



$-t_{0.025}(23) = -2.069$ 0 $t_{0.025}(23) = 2.069$.

∴ 棄卻虛無假設，即兩種教學方法對學生成績表現有顯著差異.

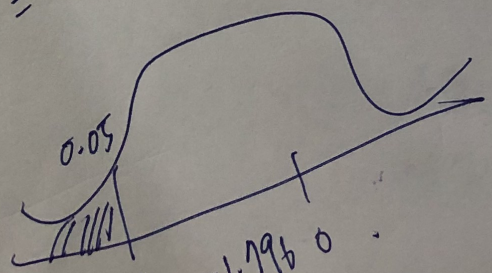
例 7.9

(1) $H_0: \mu_1 - \mu_2 \geq 0$, $H_1: \mu_1 - \mu_2 < 0$.

(2) $\alpha = 0.05$

(3) 棄卻域 $C = \{T < -t_{0.05}(11)\} = \{T < -1.796\}$.

(4) $T = \dfrac{\bar{d} - d_0}{\frac{S_d}{\sqrt{n}}} = \dfrac{-3.5 - 0}{\frac{5.231}{12}} = -2.318.$



$-t_{0.05}(11) = -1.796$ 0.

∴ 棄卻虛無假設，即接受進修後的員工可以有比較好的工作表現.