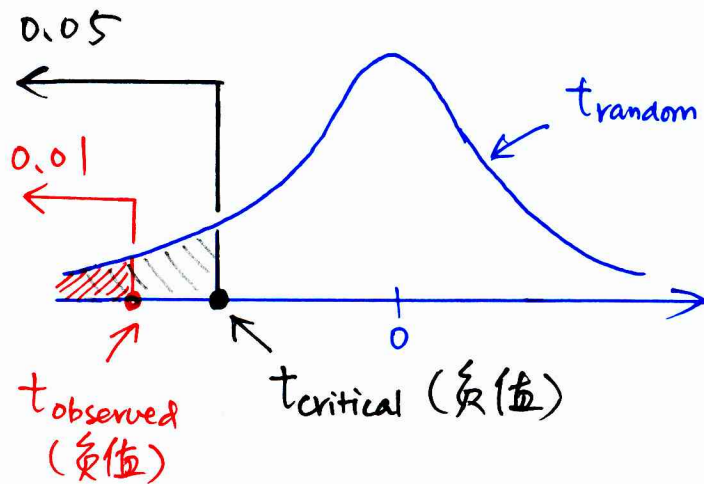


單雙尾檢定下的 α 與 p-value

↓
顯著水準

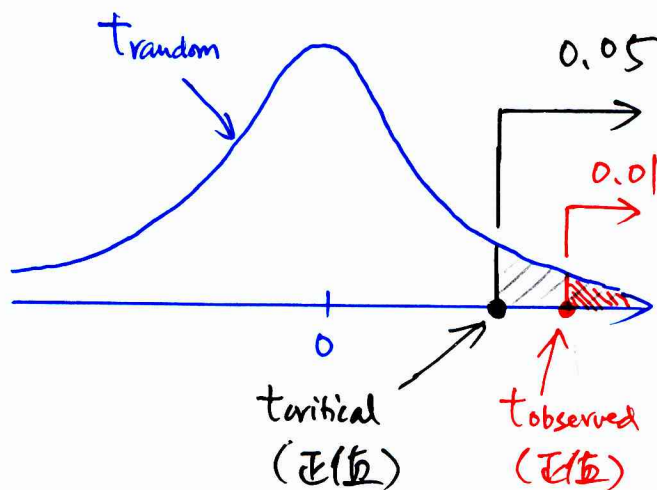
1) 左尾檢定 $H_0: \mu \stackrel{(\geq)}{=} 10$
 $H_1: \mu < 10$



$$\alpha = P(t_r < t_{critical}) = 0.05$$

$$p = P(t_r < t_{observed}) = 0.01$$

2) 右尾檢定 $H_0: \mu \stackrel{(\leq)}{=} 10$
 $H_1: \mu > 10$

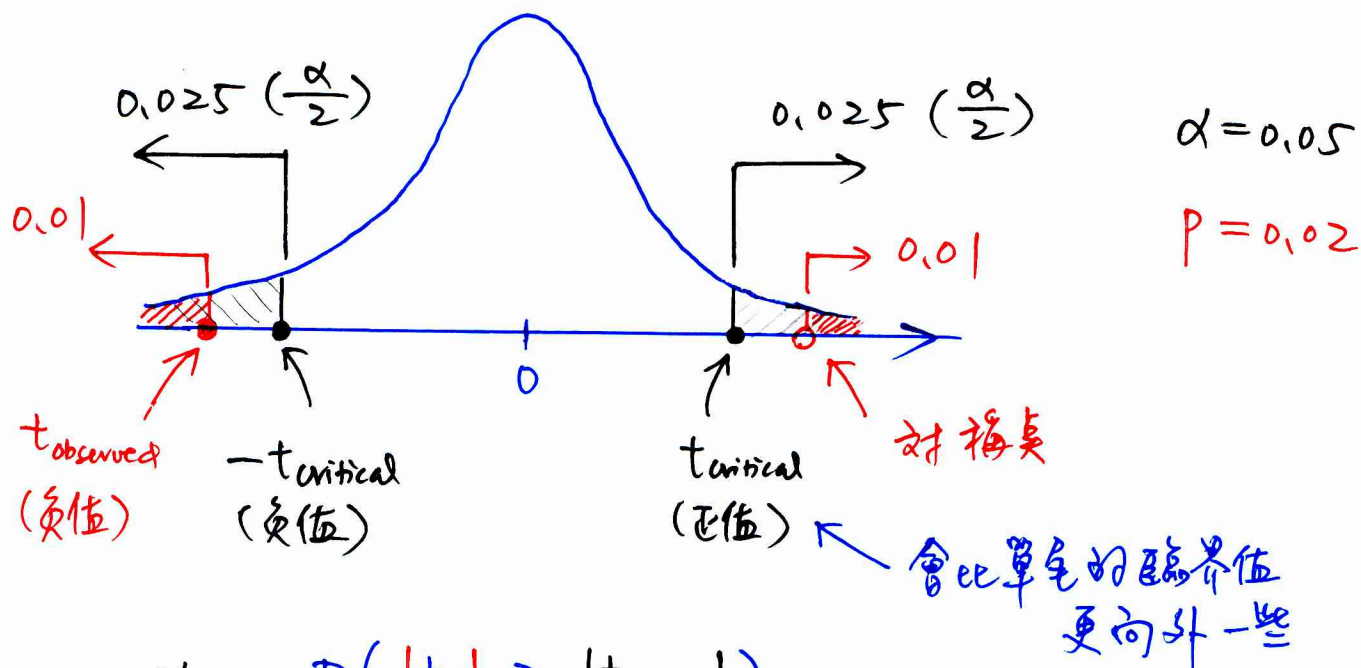


$$\alpha = P(t_r > t_{critical}) = 0.05$$

$$p = P(t_r > t_{observed}) = 0.01$$

3) 雙尾檢定 $H_0: \mu = 10$

$H_1: \mu \neq 10$



$$\alpha = P(|t_r| > |t_{critical}|)$$

$$= P(t_r > |t_{critical}|) + P(t_r < -|t_{critical}|)$$

$$= \underbrace{0.025 \left(\frac{\alpha}{2} \right)} + \underbrace{0.025 \left(\frac{\alpha}{2} \right)} = 0.05$$

$$P = P(|t_r| > |t_{observed}|)$$

雙尾
p-value

$$= P(t_r > |t_{observed}|) + P(t_r < -|t_{observed}|)$$

$$= 2 \times P(t_r > |t_{observed}|)$$

單尾 p-value (同樣的觀察值)

$$= 2 \times 0.01$$

$$= 0.02$$