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例 6-10

$$n_1 = 250, \bar{x} = 14.5, S_1 = 3.5, n_2 = 180, \bar{y} = 20.8, S_2 = 3.8$$

(1) $\bar{x} - \bar{y} = 14.5 - 20.8 = -6.3$ ✖

(2)

$$(\bar{x} - \bar{y}) \pm Z_{\frac{\alpha}{2}} \sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}, 1 - \alpha = 0.98, \frac{\alpha}{2} = 0.01, Z_{\frac{\alpha}{2}} = Z_{0.01} = 2.226$$

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$$(\bar{x} - \bar{y}) \pm Z_{\frac{\alpha}{2}} \sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}} = (14.5 - 20.8) \pm 2.226 \sqrt{\frac{(3.5)^2}{250} + \frac{(3.8)^2}{180}}$$

$$= (-6.3) \pm 0.835 = (-6.3) \pm 0.84 \quad (-7.14, -5.46) \text{ ✖}$$

例 6-11

$$n_1 = 12, \bar{x} = 36, S_1 = 5, n_2 = 15, \bar{y} = 32, S_2 = 7$$

$$1 - \alpha = 0.90, \frac{\alpha}{2} = 0.05, t_{\frac{\alpha}{2}}(n_1 + n_2 - 2) = t_{0.05}(25) = 1.708$$

$$S_p^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2} = \frac{(12 - 1)5^2 + (15 - 1)7^2}{12 + 15 - 2} = \frac{961}{25} = 38.44$$

$$(\bar{x} - \bar{y}) \pm t_{\frac{\alpha}{2}}(n_1 + n_2 - 2) \sqrt{S_p^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)} = (36 - 32) \pm 1.708 \sqrt{38.44 \left(\frac{1}{12} + \frac{1}{15} \right)}$$

$$= 4 \pm 4.10$$

$$(-0.1, 8.1) \text{ ✖}$$