

大文字のsは\$と書いています。

No. _____

Date _____

問4-1 $\bar{X} \sim N(160.0, 6.0^2/50)$

$$P(\bar{X} \geq 161.5) = P\left(\frac{\bar{X}-160}{\sqrt{6.0^2/50}} \geq \frac{161.5-160}{\sqrt{6.0^2/50}}\right) \quad \checkmark \text{正規分布表を読みとる}$$
$$= 1 - \Phi\left(\frac{1.5}{\sqrt{6.0^2/50}}\right) = 1 - \Phi(1.77) = 1 - 0.9616 = 0.0384$$

($\frac{1.5}{6}$) 0.038 //

4-2

$$P(159 \leq \bar{X} \leq 161) = P\left(\frac{159-160}{\sqrt{6.0^2/50}} \leq \frac{\bar{X}-160}{\sqrt{6.0^2/50}} \leq \frac{161-160}{\sqrt{6.0^2/50}}\right)$$
$$= \Phi\left(\frac{5\sqrt{2}}{6}\right) - \Phi\left(-\frac{5\sqrt{2}}{6}\right) \quad \checkmark \Phi(-x) = 1 - \Phi(x)$$
$$= 2\Phi(1.18) - 1 = 0.762$$

($\frac{5\sqrt{2}}{6}$) 0.762 //

問5-1 $\bar{X} \sim N(\mu, \sigma^2/n)$

$$s^2 = 146.4 \quad s^2 = \frac{n}{n-1} \sigma^2 = \frac{40}{39} \cdot 146.4^2$$

$$\frac{\bar{X}-\mu}{\sqrt{\sigma^2/n}} \sim N(0,1)$$

$$\frac{\bar{X}-\mu}{\sqrt{s^2/n}} \sim t(40-1) \text{ の } t$$

定理 7.1

$$P\left(55 - t_{0.05/2}(40-1) \sqrt{\frac{40}{39} \times \frac{146.4^2}{40}} \leq \mu \leq 55 + t_{0.05/2}(40-1) \sqrt{\frac{40}{39} \times \frac{146.4^2}{40}}\right)$$

大分布表より 2.023 $= 1 - 0.05 = 0.95$

($\frac{1.5}{6}$) [9.576, 102.424] ← 自信ない //