第四次作业订正

补充1.(3) 解：$X \sim N(\mu, 0.25)$ $E = X - \mu$ $\Rightarrow$ $E \sim N(0, 0.25)$ ($\sigma^2 = 0.25$!)

$\therefore P(|E| \leq 0.6) = 2\Phi\left(\dfrac{0.6}{0.5}\right) - 1 = 2\Phi(1.2) - 1 = 0.7698$

(i) $Y \sim B(20, 0.7698)$

(ii) 记测量 n 次（独立测量）中误差绝对值不超过 $0.6m$ 的次数为 Y_n

则 $Y_n \sim B(n, 0.7698)$ $(n \geq 1)$

$P(Y_n \geq 1) = 1 - P(Y_n = 0) = 1 - (1 - 0.7698)^n > 0.9$ $\Rightarrow$ $0.2302^n < 0.1$

$\therefore n > \log_{0.2302} 0.1 \approx 1.57$ $\therefore n_{min} = 2$ $\square$

43.(2) 解：$Y_2 = e^{-X} \in (0, +\infty)$. $\therefore y \leq 0$ 时 $f_{Y_2}(y) = 0$.

$y > 0$ 时. $f_{Y_2}(y) = \dfrac{1}{\sqrt{2\pi}} e^{-\frac{(\ln y)^2}{2}} \cdot |(\ln y)'| = \dfrac{1}{\sqrt{2\pi} y} e^{-\frac{(\ln y)^2}{2}}$

综上：
$$f_{Y_2}(y) = \begin{cases} \dfrac{1}{\sqrt{2\pi} y} e^{-\frac{(\ln y)^2}{2}} & , y > 0 \\ 0 & , otherwise \end{cases}$$
$\square$