P87. 35

$P(X>C) = 1 - P(X<C) = P(X<C) \Rightarrow P(X<C) = \frac{1}{2}$

$\therefore C = \mu = 2$

P87. 38

$P(X \le 60) = \Phi\left(\frac{60-66}{\sigma}\right) = 0.25 \Rightarrow \sigma = 8.89$.

设 $A = \{$体重超过65kg$\}$ $\therefore P(A) = P(X>65) = 1 - P(X<65) = 1 - F(65)$.

$F(65) = \Phi\left(\frac{65-66}{\sigma}\right)$, $\therefore P(A) = 0.545$.

设 Y 为 A 的人数 $\therefore Y \sim B(3, P(A))$.

$P(Y \ge 1) = 1 - P(Y=0) = 1 - C_3^0 P(A)^0 (1-P(A))^3 = 0.9058$.

P87. 40 $X \sim N(300, 35^2)$.

(1) $P(X>250) = 1 - P(X \le 250) = 1 - F(250) = 1 - \Phi\left(\frac{250-300}{35^2}\right) = \Phi\left(\frac{5}{7}\right)$

$= 0.9236$

(2) $P(|X-300|<X) = \Phi\left(\frac{X}{35}\right) - \Phi\left(\frac{-X}{35}\right) = 2\Phi\left(\frac{X}{35}\right) - 1 \ge 0.9$.

$\Rightarrow \Phi\left(\frac{X}{35}\right) \ge 0.95$. $\Rightarrow X = 57.575$.

P91. 41

$P(X=-2) = 0.3$. $P(X=-1) = 0.6$. $P(X=2) = 0.1$

$Y = X^2 - 3 = \{1, -2\}$. $\therefore P(Y=1) = P(X=-2 \cup X=2) = 0.4$.

$P(Y=-2) = P(X=-1) = 0.6$.

$\therefore F(y) = \begin{cases} 0 & y<-2 \\ 0.6 & -2 \le y < 1 \\ 1 & y \ge 1 \end{cases}$

同理 $P(Z=2) = P(X=-2 \cup X=2) = 0.4$.

$P(Z=1) = P(X=-1) = 0.6$.

$F(z) = \begin{cases} 0 & z<1 \\ 0.6 & 1 \le z < 2 \\ & z \ge 2 \end{cases}$