5.1.3.$p(x_1, x_2, \ldots, x_m) = \Pi_{i=1}^{m}[C_n^{x_i} p^{x_i}(1-p)^{n-x_i}] = p^{\Sigma_{i=1}^{m} x_i}(1-p)^{nm-\Sigma_{i=1}^{m} x_i}\Pi_{i=1}^{m} C_n^{x_i}$

5.1.6.$p(x_1, x_2, \ldots, x_n) = \begin{cases} n - e^{-\lambda \Sigma_{i=1}^{n} x_i}, x_i \geq 0, 1 \leq i \leq n, i \in Z \\ 0, \text{其他} \end{cases}$

5.1.7.$\begin{cases} 0, x \in (-\infty, -0.5) \\ 0.1, x \in [-0.5, 0.2) \\ 0.2, x \in [-0.2, 0.2) \\ 0.4, x \in [0.2, 0.5) \\ 0.7, x \in [0.5, 0.7) \\ 0.9, x \in [0.7, 1.5) \\ 1, x \in [1.5, \infty) \end{cases}$

5.2.3.(1)$p(x_1, x_2, \ldots, x_n) = p^{\Sigma_{i=1}^{n} x_i}(1-p)^{n-\Sigma_{i=1}^{n} x_i}$

(2)$p(s) = C_n^s p^s (1-p)^{n-s}$

(3)$E\overline{X} = p$

$Var\overline{X} = \frac{p(1-p)}{n}$

$EVar^2 X = p(1-p)$

5.2.6.$\overline{X}' = \frac{n\overline{X} + X_{n+1}}{n+1}$

$S'^2 = \frac{n-1}{n} S^2 + \frac{1}{n+1}(X_{n+1} - \overline{X_n})^2$

5.3.3.$\frac{(X+Y)^2}{(X-Y)^2} \sim F(1, 1)$

查表得$P(F(1, 1) \leq 4) = 0.705$

5.3.4.$X_2 + X_4 \sim N(0, 2), \frac{X_2 + X_4}{\sqrt{2}} \sim N(0, 1)$

$\sqrt{\frac{X_1^2 + X_3^2 + X_5^2}{3}} \sim \chi^2(3)$

因此$C = \frac{\sqrt{6}}{2}$

5.3.9.$\overline{X} \sim N(\mu, \frac{\sigma^2}{n}), X_{n+1} \sim N(\mu, \sigma^2)$

$X_{n+1} - \overline{X} \sim N(0, \frac{n+1}{n}\sigma^2)$

$T = \frac{N(0, \frac{n+1}{n}\sigma^2)}{S}\sqrt{\frac{n+1}{n}} = \frac{N(0, \frac{\sigma^2}{n}) - 0}{S}\sqrt{n} \sim t(n-1)$

5.3.10.$EY = 0, VarY = \frac{2}{n(n+1)}$