Ch 2.

19 (1) (2) (3) (4) (5)　　9. (1) (2) (3) (4) (5)，14 (1) (2)

19. 解:

(1). $P\{至多3min\} = P\{x \le 3\} = F_X(3)$

$= 1 - e^{-1.2}$

(2) $P\{至少4min\} = P\{x > 4\} = 1 - F_X(4)$

$= e^{-1.6}$

(3) $P\{3min至4min之间\} = P(3 \le X \le 4) = F_X(4) - F_X(3-0)$

$= (1 - e^{-1.6}) - (1 - e^{-1.2})$

$= e^{-1.2} - e^{-1.6}$

(4) $P\{至多3min或至少4min\} = P(x \le 3) \cup P(x \ge 4)$

$= 1 - P(3 < x < 4)$

$= 1 - (F_X(4-0) - F_X(3))$

$= 1 - [1 - e^{-1.6} - (1 - e^{-1.2})]$

$= 1 + e^{-1.6} - e^{-1.2}$

(5) $P\{恰好2.5min\} = P(x = 2.5) = F_X(2.5) - F_X(2.5-0)$

$= 0$

9. 解：设 X 为所抽10件产品中的次品数，则 $X \sim b(10, 0.1)$

Y 为所抽5件产品中的次品数. 则 $Y \sim b(5, 0.1)$

第一次检验与第二次检验相互独立

(1) $P\{X=0\} = C_{10}^{0} (0.1)^{0} \cdot (0.9)^{10} = (0.9)^{10} = 0.349$

(2) $P\{0<X \leq 2\} = P(X=1) + P(X=2)$

$= C_{10}^{1} (0.1)^{1} \cdot (0.9)^{9} + C_{10}^{2} (0.1)^{2} \cdot (0.9)^{8}$

$= 0.581$

(3). $P\{Y=0\} = C_{5}^{0} (0.1)^{0} \cdot (0.9)^{5} = 0.590$

(4) $P\{(0<X\leq 2) \cap (Y=0)\} = P\{0<X\leq 2\} \times P\{Y=0\}$

$= 0.343$

(5). 设 A 为"这批产品被接受.

则 $P(A) = \cancel{P\{X=0\}}\ P\{(X=0) \cup [(0<X\leq 2)\cap(Y=0)]\}$

$= P(X=0) + P\{(0<X\leq 2)\cap(Y=0)\}$

$= 0.692$

14 解: 已知 $X \sim \pi(2t)$

(1) $t = \frac{1}{6}h$ 则 $\lambda = \frac{1}{3}$

$$P(x=1) = \frac{\left(\frac{1}{3}\right)^1}{1!} e^{-\frac{1}{3}} = \frac{1}{3} e^{-\frac{1}{3}}$$

(2) 有 $P(x=0) = e^{-2t} \geq 0.5$

则 $t \leq \frac{1}{2}\ln 2 = 0.347$