Výsledky

74.

$$F(x) = \begin{cases} 0 & x < 0 \\ p & 0 \le x < 1 \\ 1 & x \ge 1 \end{cases}$$

75.

(a)

$$p(x) = \begin{cases} \frac{1}{6} & x = 1, 2, 3, 4, 5, 6 \\ 0 & \text{jinak.} \end{cases}$$

(b)

$$F(x) = \begin{cases} 0 & x < 1 \\ \frac{1}{6} & 1 \le x < 2 \\ \frac{2}{6} & 2 \le x < 3 \\ \frac{3}{6} & 3 \le x < 4 \\ \frac{4}{6} & 4 \le x < 5 \\ \frac{5}{6} & 5 \le x < 6 \\ 1 & x \ge 6 \end{cases}$$

76.

(a) $X \sim Bi(3, \frac{1}{6})$

$$p(x) = \begin{cases} \binom{3}{x}(\frac{1}{6})^x(\frac{5}{6})^{3-x} & x = 0, 1, 2, 3 \\ 0 & \text{jinak.} \end{cases}$$

(b) $\frac{1}{216} = 0.00463$

77.

(a)

$$p(x) = \begin{cases} \frac{1}{2} & x = 0 \\ (\frac{1}{2})^2 & x = 1 \\ (\frac{1}{2})^3 & x = 2 \\ (\frac{1}{2})^4 & x = 3, 4 \\ 0 & \text{jinak.} \end{cases}$$

(b)

$$F(x) = \begin{cases} 0 & x < 0 \\ \frac{1}{2} & 0 \le x < 1 \\ \frac{3}{4} & 1 \le x < 2 \\ \frac{7}{8} & 2 \le x < 3 \\ \frac{15}{16} & 3 \le x < 4 \\ 1 & x \ge 4 \end{cases}$$

78.
(a)
$$f(x) = \begin{cases} \frac{1}{3} & 3 \le x < 6 \\ 0 & \text{jinak.} \end{cases}$$

80.
(b)
$$f(x) = \begin{cases} \cos(x) & 0 \le x < \frac{\pi}{2} \\ 0 & \text{jinak.} \end{cases}$$

81.
(b)
$$F(x) = \begin{cases} 0 & x < 0 \\ 3x^2 - 2x^3 & 0 \le x < 1 \\ 1 & x \ge 1 \end{cases}$$

83.
(b) $F(x) = \frac{1}{\pi} \arctan(x) + \frac{1}{2}$

85.
(b)
$$f(x) = \begin{cases} e^{-x} & x > 0 \\ 0 & \text{jinak} \end{cases}$$

92.
$$p(x,y) = \begin{cases} \binom{9}{x}\binom{8}{y}\binom{3}{6-x-y} & (x,y) \in \{0,1,\dots,6\}^2 \quad 3 \le x+y \le 6 \\ 0 & \text{jinak} \end{cases}$$

94.
$$p_X(x) = \begin{cases} \frac{1}{16}(2x^2 - 5) & x = 2, 3 \\ 0 & \text{jinak} \end{cases}$$

$$p_Y(y) = \begin{cases} \frac{1}{16}(13 - 2y^2) & x = 1, 2 \\ 0 & \text{jinak} \end{cases}$$

96.
(b)
$$F(x,y) = \begin{cases} 0 & x < 1 \vee y < 1 \\ (e^2 - e)^{-2}(e^y - e)(e^x - e) & x \in [1,2] \wedge y \in [1,2] \\ (e^2 - e)^{-1}(e^x - e) & x \in [1,2] \wedge y > 2 \\ (e^2 - e)^{-1}(e^y - e) & x > 2 \wedge y \in [1,2] \\ 1 & x > 2 \wedge y > 2 \end{cases}$$

97.

(b)
$$F(x,y) = \begin{cases} 0 & x < 0 \lor y < 0 \\ (e-2)^{-1}(\frac{e^{xy}}{y} - x - \frac{1}{y}) & x \in [0,1] \land y \in [0,1] \\ (e-2)^{-1}(e^x - x - 1) & x \in [0,1] \land y > 1 \\ (e-2)^{-1}\frac{e^y}{y} - 1 - \frac{1}{y} & x > 1 \land y \in [0,1] \\ 1 & x > 1 \land y > 1 \end{cases}$$

98.

(a) V zadání má být $b = 6$

(b)
$$f_X(x) = \begin{cases} \frac{3}{8}x(6-x) & 0 \leq x \leq 1 \\ 0 & \text{jinak} \end{cases}$$

$$f_Y(y) = \begin{cases} \frac{1}{16}(9-y) & 0 \leq y \leq 2 \\ 0 & \text{jinak} \end{cases}$$

99.

(b)
$$f_X(x) = \begin{cases} e^{-x} & x > 0 \\ 0 & \text{jinak} \end{cases}$$

$$f_Y(y) = \begin{cases} e^{-y} & y > 0 \\ 0 & \text{jinak} \end{cases}$$

(c)
$$F(x,y) = \begin{cases} (1-e^{-y})(1-e^{-x}) & x > 0 \land y > 0 \\ 0 & \text{jinak} \end{cases}$$

(d)
$$F_X(x) = \begin{cases} 1-e^{-x} & x > 0 \\ 0 & \text{jinak} \end{cases}$$

$$F_Y(y) = \begin{cases} 1-e^{-y} & y > 0 \\ 0 & \text{jinak} \end{cases}$$

106.

(a)
$$F(x,y) = \begin{cases} 0 & x < 0 \lor y < 0 \\ \frac{1}{4}x^2y^2 & x \in [0,1] \land y \in [0,2] \\ x^2 & x \in [0,1] \land y > 2 \\ \frac{1}{4}y^2 & x > 1 \land y \in [0,2] \\ 1 & x > 1 \land y > 2 \end{cases}$$

3

(hustota)

$$f(x,y) = \begin{cases} xy & x \in [0,1] \wedge y \in [0,2] \\ 0 & \text{jinak} \end{cases}$$

107.

(a)

$$F_{X_i}(x_i) = \begin{cases} 0 & x_i \leq 0 \\ x_i^3 & x \in (0,1) \\ 1 & x \geq 1 \end{cases}$$

(b) Označme $F_X(x) := F_{X_1}(x_1) = F_{X_2}(x_2) = F_{X_3}(x_3)$.

$$\binom{3}{2} F(0.5)(1 - F(0.5))^2 = 0.287$$