

$y \backslash x$	1	2	3	4	5	6	$P(y)$
0	$\frac{1}{36}$	$\frac{2}{36}$	$\frac{3}{36}$	$\frac{4}{36}$	$\frac{5}{36}$	0	$\frac{25}{36}$
1	0	0	0	0	0	$\frac{10}{36}$	$\frac{10}{36}$
2	0	0	0	0	0	$\frac{1}{36}$	$\frac{1}{36}$
$P(x)$	$\frac{1}{36}$	$\frac{2}{36}$	$\frac{3}{36}$	$\frac{4}{36}$	$\frac{5}{36}$	$\frac{11}{36}$	1

.9.1

$$P(x,y) = \begin{cases} \frac{1}{36} & (x=1, y=0), (x=6, y=0) \\ \frac{2}{36} & (x=2, y=0) \\ \frac{3}{36} & (x=3, y=0) \\ \frac{4}{36} & (x=4, y=0) \\ \frac{5}{36} & (x=5, y=0) \\ \frac{10}{36} & (x=1, y=1) \\ 0 & \dots \end{cases}$$

$$P(x) = \sum_y P(x,y) = \begin{cases} \frac{1}{36} & x=1 \\ \frac{2}{36} & x=2 \\ \frac{3}{36} & x=3 \\ \frac{4}{36} & x=4 \\ \frac{5}{36} & x=5 \\ \frac{11}{36} & x=6 \\ 0 & \dots \end{cases} \quad (2)$$

$$P(y) = \sum_x P(x,y) = \begin{cases} \frac{25}{36} & y=0 \\ \frac{10}{36} & y=1 \\ \frac{1}{36} & y=2 \\ 0 & \dots \end{cases}$$

$$F(x) = \frac{1}{36}$$

$$P(x=1) = \frac{25}{36}$$

$$P(x=2) = \frac{24}{36} \cdot \frac{1}{36} \quad (2)$$

$Y \backslash X$	0	1	2	3	$P_Y(y)$
0	$\frac{1}{8}$	$\frac{1}{8}$	0	0	$\frac{1}{4}$
1	0	$\frac{1}{4}$	$\frac{1}{4}$	0	$\frac{1}{2}$
2	0	0	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{4}$
$P_X(x)$	$\frac{1}{8}$	$\frac{2}{8}$	$\frac{2}{8}$	$\frac{1}{8}$	1

.9.2

$$P_{X,Y}(x,y) = \begin{cases} \frac{1}{8} & (x=0, y=0), (x=2, y=0) \\ \frac{1}{4} & (x=2, y=2), (x=2, y=1) \\ 0 & \text{~ n/c} \end{cases} \quad (1c)$$

$$P_X(x) = \sum_y P_{X,Y}(x,y) = \begin{cases} \frac{1}{8} & x=0 \\ \frac{2}{8} & x=1 \\ \frac{2}{8} & x=2 \\ \frac{1}{8} & x=3 \\ 0 & \text{~ n/c} \end{cases} \quad (2)$$

$$P_Y(y) = \sum_x P_{X,Y}(x,y) = \begin{cases} \frac{1}{4} & y=0, 2 \\ \frac{1}{2} & y=1 \\ 0 & \text{~ n/c} \end{cases}$$

$$P(X \geq 2) = \frac{1}{4} = \frac{1}{2} \quad (3)$$

$$P(Y=1) = \frac{1}{2} = \frac{1}{2}$$

$$F_{(X,Y)}(x,y) = \frac{1}{8}$$

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9.3

$y \backslash x$	0	1	2	$P(y)$
0	$\frac{1}{36}$	$\frac{4}{36}$	$\frac{1}{36}$	$\frac{6}{36}$
1	$\frac{4}{36}$	$\frac{16}{36}$	$\frac{4}{36}$	$\frac{24}{36}$
2	$\frac{1}{36}$	$\frac{4}{36}$	$\frac{1}{36}$	$\frac{6}{36}$
$P(x)$	$\frac{6}{36}$	$\frac{24}{36}$	$\frac{6}{36}$	1

$$P_{x,y} = \begin{cases} \frac{1}{36} & (x=0, y=0) \\ & (x=2, y=0) \\ & (x=0, y=2) \\ & (x=2, y=2) \\ \frac{4}{36} & (x=1, y=0) \\ & (x=0, y=1) \\ & (x=2, y=1) \\ & (x=1, y=2) \\ \frac{16}{36} & (x=1, y=1) \\ 0 & \dots \end{cases}$$

$$P_x(x) = \sum_y P_{x,y} = \begin{cases} \frac{1}{36} & x=0 \\ \frac{24}{36} & x=1 \\ \frac{1}{36} & x=2 \\ 0 & \dots \end{cases}$$

$$P_y(y) = \sum_x P_{x,y} = \begin{cases} \frac{6}{36} & y=0 \\ \frac{24}{36} & y=1 \\ \frac{6}{36} & y=2 \\ 0 & \dots \end{cases}$$

$$P(x=0) = \frac{6}{36} = \frac{1}{6}$$

$$P(y=0) = 0$$

$$F_{x,y} = 1$$

~~the problem is~~  
~~unrelated~~

$y \backslash x$	0	1	2	3	$P(y^i)$
0	0	0	0	$\frac{1}{8}$	$\frac{1}{8}$
1	0	0	$\frac{3}{8}$	0	$\frac{3}{8}$
2	0	$\frac{2}{8}$	0	0	$\frac{2}{8}$
3	$\frac{1}{8}$	0	0	0	$\frac{1}{8}$
$P(x^i)$	$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{1}{8}$	1

(2,1) (9.4)

$$P(x=0) = \frac{1}{8}$$

$$P(y=0) = 0$$

$$P(y=1, x=0) = 0$$

$$P(y=2, x=1) = 0$$

(2)

$x \backslash y$	0	1	2	3	$p_{y^{(2)}}$
0	0	0	$\frac{3}{20}$	$\frac{1}{20}$	$\frac{4}{20}$
1	0	$\frac{6}{20}$	$\frac{6}{20}$	0	$\frac{12}{20}$
2	$\frac{1}{20}$	$\frac{3}{20}$	0	0	$\frac{4}{20}$
$p_{x^{(2)}}$	$\frac{1}{20}$	$\frac{9}{20}$	$\frac{9}{20}$	$\frac{1}{20}$	1

(2,4)

(9,5)

$$F_{x,y}^{(1,4)} = \frac{6+3+1}{20} = \frac{1}{2}$$

(2)

$$F_{x,y}^{(4,1)} = \frac{6}{20}$$

$$p(x=2, y=1) = \frac{6}{20}$$

9.6

9.3 זגור טאנה

$$\frac{1}{36} = P_{X,Y}^{(0,0)} = P_X^{(0)} P_Y^{(0)} = \frac{6}{36} \cdot \frac{6}{36} = \frac{1}{36}$$

$$\frac{4}{36} = P_{X,Y}^{(0,1)} = P_X^{(0)} P_Y^{(1)} = \frac{6}{36} \cdot \frac{24}{36} = \frac{4}{36}$$

$$\frac{1}{36} = P_{X,Y}^{(0,2)} = P_X^{(0)} P_Y^{(2)} = \frac{6}{36} \cdot \frac{6}{36} = \frac{1}{36}$$

⋮

$$\frac{1}{36} = P_{X,Y}^{(2,2)} = P_X^{(2)} P_Y^{(2)} = \frac{6}{36} \cdot \frac{6}{36} = \frac{1}{36}$$

⇒  
y! x  
טאנה  
טאנה

9.4 זגור טאנה

$$0 = P_{X,Y}^{(0,0)} \neq P_X^{(0)} P_Y^{(0)} = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4} \Rightarrow$$

טאנה y! x  
זינאן נאזי?

9.5 זגור טאנה

$$0 = P_{X,Y}^{(0,0)} \neq P_X^{(0)} P_Y^{(0)} = \frac{1}{20} \cdot \frac{4}{20} = \frac{4}{400} \Rightarrow$$

טאנה y! x  
זינאן נאזי?