1.

y	1	2	5
$f(y)$	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{2}{5}$

2.

(1)

w	–2	1	3	4	6	9
$f(w)$	$\frac{2}{31}$	$\frac{5}{31}$	$\frac{1}{31}$	$\frac{10}{31}$	$\frac{4}{31}$	$\frac{9}{31}$

(2)

z	–1	0
$f(z)$	$\frac{17}{31}$	$\frac{14}{31}$

$E(z) = -\frac{17}{31}$

3.

w	–2	–1	0	1	2	3	4
$f(w)$	$\frac{5}{60}$	$\frac{14}{60}$	$\frac{23}{60}$	$\frac{12}{60}$	$\frac{1}{60}$	$\frac{2}{60}$	$\frac{3}{60}$

4.

$$f_Y(y) = \frac{y-1}{4}|2y-5|, \quad y = 1, \frac{3}{2}, 2, \frac{5}{2}, 3$$

5.

$$\therefore f_Y(y) = \frac{1}{2\sqrt{y}}, 0 < y < 1$$

6.

$$f_U(u) = \begin{cases} u, & 0 \le u \le 1 \\ 2-u, & 1 < u \le 2 \end{cases}$$

7.

$$f(y_1, y_2) = \frac{2y_2}{y_1}, \quad 0 < y_2 < y_1, 0 < y_1 y_2 < 1$$

8.

$$f_Y(y) = 8(y-1), 1 < y \le \frac{3}{2}$$

9.

$$f_Y(y) = \lambda e^{-\lambda y}, \quad y > 0$$

10.

$$f(y) = \begin{cases} \dfrac{e^{-\sqrt{y}}}{2\sqrt{y}}, & y > 0 \\ 0, & o.w. \end{cases}$$

11.

(1) $f_Y(y) = \dfrac{y-\beta}{4\alpha^2} e^{-\frac{y-\beta}{2\alpha}}, y > \beta$

(2) $f_Z(z) = \dfrac{1}{4z\sqrt{z}} \ln z, z > 1$

(3) $f_Y(y) = \dfrac{1}{4y^3} e^{-\frac{1}{2y}}, y > 0$

(4) $f_Z(z) = \dfrac{z^3}{2} e^{-\frac{z^2}{2}}, z > 0$

12.

y	1	3/2	2	5/2	3
$f(y)$	0	2/8	2/8	0	4/8

13.

(1)

z_1	0	1
$f(z_1)$	$\frac{2}{6}$	$\frac{4}{6}$

(2)

z_2	-1	-2	0	1	2
$f(x,y)$	$\frac{2}{42}$	$\frac{5}{42}$	$\frac{14}{42}$	$\frac{6}{42}$	$\frac{15}{42}$

(3)

z_1 \ x	-1	0	1
0	0	$\frac{2}{6}$	0
1	$\frac{1}{6}$	0	$\frac{3}{6}$

14.

z \ y	0	1	4
-1	0	1/3	0
0	1/6	0	0
1	0	1/6	0
8	0	0	1/3

15.

$\lvert x-y \rvert$	3	1	1	3
$f(\lvert x-y \rvert)$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{8}$

16.

$$f(u,v)=\frac{1}{4}uv,\quad 0<u<2,0<v<2$$

17.

$$\therefore\ f(z)=\begin{cases} z, & 0<z\le 1 \\ 2-z, & 1<z<2 \end{cases}$$

18.

$$f(w)=\int_0^{\infty} ze^{-z}dz=1,\quad 0\le w\le 1$$

19.

$$f(y)=\frac{1}{8},\quad -2<y<6$$

20.

$$f(y)=\begin{cases} \frac{\sqrt{y}}{6}, & 0\le y<1 \\ \frac{\sqrt{y}}{3}, & 1\le y\le 4 \\ 0, & o.w. \end{cases}$$

21.

$$f(y)=\frac{1}{2\sqrt{y-b}\sqrt{a}}\, f_X(\sqrt{\frac{y-b}{a}}),\quad y>b$$ 。

22.

$$\therefore\ f(u)=\frac{5}{64}u^{2.5},\quad 0<u<4$$

23.

$$\therefore\ f(y_1, y_2) = y_1 e^{-y_1}, \quad 0 \le y_1 < \infty, 0 \le y_2 \le 1$$

24.

$$f(w) = \begin{cases} 1+w, & -1 \le w < 0 \\ 1-w, & 0 \le w \le 1 \end{cases}$$