1. (a) $F(c) = \begin{cases} 0 & se & c < -1 \\ c + \frac{1}{2}c^2 + \frac{1}{2} & se & -1 \le c < 0 \\ c - \frac{1}{2}c^2 + \frac{1}{2} & se & 0 \le c < 1 \\ 1 & se & c \ge 1 \end{cases}$ (b) $0; \frac{7}{8}; \frac{3}{8}; \frac{1}{8}; \frac{5}{9}$

2. (a) $k = \frac{1}{2}$, $F(c) = \begin{cases} \frac{1}{2}e^c & se & c < 0 \\ 1 - \frac{1}{2}e^{-c} & se & c \ge 0 \end{cases}$
   (b) $\frac{1}{2}; \frac{1}{2}; \frac{1}{2}(1 - e^{-1}); \frac{1}{2}(1 - e^{-1}); 1 - e^{-1}$ (c) $Exp(1)$

3. (a) $F(c) = \begin{cases} 0 & se & c < 0 \\ 1 - e^{-\lambda c} & se & c \ge 0 \end{cases}$; $P(T > c) = \begin{cases} 1 & se & c < 0 \\ e^{-\lambda c} & se & c \ge 0 \end{cases}$ (b) —
   (c) $\frac{3e^{-4}}{3e^{-4} + e^{-2}}$

4. (a) $a = 0; b = 1; k = 2; f(x) = \begin{cases} 0 & se & x \le 0 \vee x \ge 2 \\ 1 - \frac{x}{2} & se & 0 < x < 2 \end{cases}$
   (b) $\frac{1}{16}$ (c) 0.0344 (d) 20kg

5. $Y \sim Exp(1)$

6. —

7. (a) $0.4718; \frac{1}{2}; 0.0562; 0.1147$ (b) 0.1442

8. (a) 0.6827 (b) 0.9545 (c) 0.9973

9. (d)

10. 0.0455

11. (a) $F(c) = \begin{cases} 0 & se & c < 2 \\ \frac{c-2}{10} & se & 2 \le c \le 12 \\ 1 & se & c > 12 \end{cases}$
    (b) $U([2, 12])$ (c) 0.6; 0.1209

12. (a) 0.25 (b) 0.25 (c) 0.6 (d) 359ml

13. (a) 0.3935 (b) 0.3679 (c) 0.3935

14. $P(Y = 0) = 1 - e^{-\lambda a}$, $F_Y(c) = \begin{cases} 0 & se & c < 0 \\ 1 - e^{-\lambda(c+a)} & se & c \ge 0 \end{cases}$

15. (a) — (b) $H_1(t) = \begin{cases} 0 & se & t < -1 \\ 1 & se & t \ge -1 \end{cases}$ e $H_2(t) = \begin{cases} 0 & se & t < \frac{1}{2} \\ \frac{2t-1}{3} & se & \frac{1}{2} \le t \le 2 \\ 1 & se & t > 2 \end{cases}$

1. —

2. (a)

	$E[X]$	$Var[X]$	σ_X	$\chi_{0.25}$	$\chi_{0.5}$	$\chi_{0.75}$
5. (a)	$\frac{70}{36}$	$\frac{2660}{1296}$	$\sqrt{\frac{2660}{1296}}$	1	2	3
5. (b)	$\frac{161}{36}$	$\frac{2555}{1296}$	$\sqrt{\frac{2555}{1296}}$	3	5	5
5. (c)	$\frac{91}{36}$	$\frac{2555}{1296}$	$\sqrt{\frac{2555}{1296}}$	1	2	3
5. (d)	1	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	0	1	1
5. (e)	1	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	0	1	1
5. (f)	7	$\frac{210}{36}$	$\sqrt{\frac{210}{36}}$	5	7	9

(b)

	$E[X]$	$Var[X]$	σ_X	$\chi_{0.25}$	$\chi_{0.5}$	$\chi_{0.75}$
1.	0	$\frac{1}{6}$	$\frac{1}{\sqrt{6}}$	$-1+\frac{\sqrt{2}}{2}$	0	$1-\frac{\sqrt{2}}{2}$
2.	0	2	$\sqrt{2}$	$-\log(2)$	0	$\log(2)$
4.	$\frac{2}{3}$	$\frac{2}{9}$	$\frac{\sqrt{2}}{3}$	$2-\sqrt{3}$	$2-\sqrt{2}$	1

3. $E[Y]$ existe e $E[Y] = \frac{1-e^{-\lambda}}{\lambda}$

4. (a) $\frac{1}{2}$ (b) $Y \sim U([0,1])$, $E[Y] = \frac{1}{2}$ e $Var[Y] = \frac{1}{12}$

5. (a) $F(c) = \begin{cases} 0 & se & c < 0 \\ 4c^3 - 3c^4 & se & 0 \leq c \leq 1 \\ 1 & se & c > 1 \end{cases}$; $E[X] = \frac{3}{5}$ e $Var[X] = \frac{1}{25}$

   (b) $E[L] = \frac{8v_1+40v_2+33v_3}{81} - k$; $\sigma_L = \sqrt{\frac{8v_1^2+40v_2^2+33v_3^3}{81} - \left(\frac{8v_1+40v_2+33v_3}{81}\right)^2}$

6. —

7. —