F14076083 魏湧致

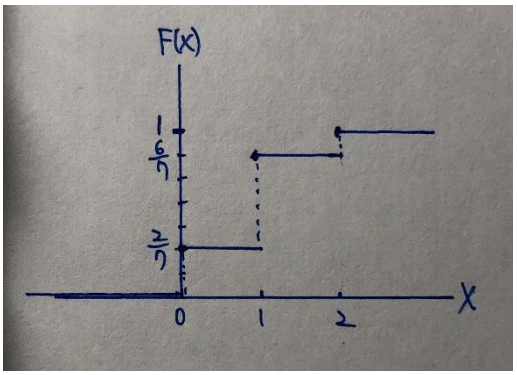
3.6

(a) P(X>200) = $\int_{200}^{\infty} \frac{20000}{(x+100)^3}\,dx = -\frac{10000}{(x+100)^2}\,|_{200}^{\infty} = \frac{10000}{90000} = \frac{1}{9}$

(b) P(80<X<120) = $\int_{80}^{120} \frac{20000}{(x+100)^3}\,dx = -\frac{10000}{(x+100)^2}\,|_{80}^{120} = \frac{10000}{180^2} - \frac{10000}{220^2} \approx 0.10203$

3.16

$$F(x) = \begin{cases} 0, & \text{whne } x < 0 \\ 2/7, & \text{when } 0 \le x < 1 \\ 6/7, & \text{when } 1 \le x < 2 \\ 1, & \text{when } x \ge 2 \end{cases}$$



3.24

f(x) = $\frac{\binom{5}{x}\binom{2+3}{4-x}}{\binom{5+2+3}{4}} = \frac{\binom{5}{x}\binom{5}{4-x}}{\binom{10}{4}}$,x=0,1,2,3,4

3.36

(a) P(X<0.5) = $\int_0^{0.5} 2(1-x)\,dx$ = 2x-x^2 $|_0^{0.5}$ = 0.75

(b) P(X>0.4) = 2x-x^2 $|_{0.4}^{1}$ = 0.36

(c) P(X<0.7 | X≥0.5) = $\frac{P(0.5\le X<0.7)}{P(X\ge 0.5)} = \frac{2x-x^2\,|_{0.5}^{0.7}}{2x-x^2\,|_{0.5}^{1}} = \frac{0.16}{0.25} = \frac{16}{25}$

3.40

(a) g(x) = $\int_0^1 \frac{2}{3}(x+2y)\,dy = \frac{2}{3}(xy+y^2)\,|_{y=0}^{y=1} = \frac{2}{3}(x+1)$, for 0≤x≤1 ,

and g(x) = 0 elsewhere

(b) h(y) = $\int_0^1 \frac{2}{3}(x+2y)\,dx = \frac{2}{3}(\frac{x^2}{2}+2xy)\,|_{x=0}^{x=1} = \frac{2}{3}(\frac{1}{2}+2y)$, for 0≤y≤1 ,

and h(y) = 0 elsewhere

(c) P(X<$\frac{1}{2}$) = $\int_0^{1/2} \frac{2}{3}(x+1)\,dx = \frac{2}{3}(\frac{x^2}{2}+x)\,|_{x=0}^{x=1/2} = \frac{5}{12}$

3.50

(a)

x	2	4
g(x)	0.1+0.2+0.1 = 0.4	0.15+0.3+0.15 = 0.6

(b)

Y	1	3	5
h(y)	0.1+0.15 = 0.25	0.2+0.3 = 0.5	0.1+0.15 = 0.25