date No.

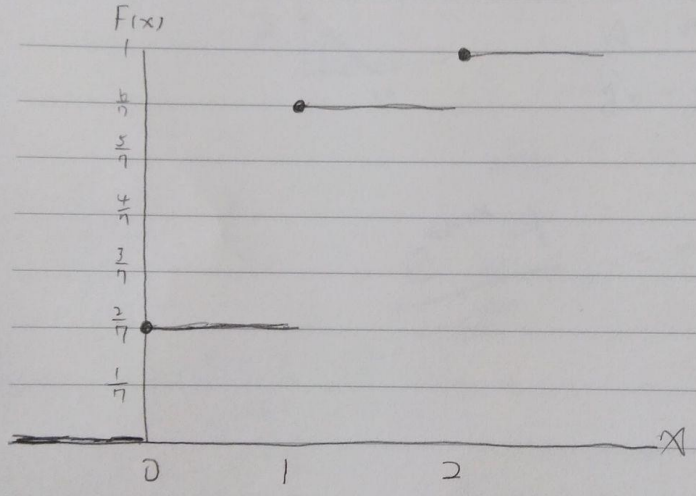
#3.6

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

(b) $P(80<X<200) = \int_{80}^{200} \frac{20000}{(x+100)^3}\,dx = \frac{-10000}{(x+100)^2}\Big|_{80}^{200} = \frac{1000}{9801}$ #

#3.16

$f(0)=\frac{2}{7}$, $f(1)=\frac{4}{7}$, $f(2)=\frac{1}{7}$



#3.24

共10本書，有5本 comic books，隨機選4本

$f(x) = \frac{C_x^5 C_{4-x}^5}{C_4^{10}}$, $x=0,1,2,3,4$ #

date . . No.

#3.36

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

(b) $P(X>0.4) = \int_{0.4}^{1} 2(1-x)\,dx = 2x - x^2 \Big|_{0.4}^{1} = 0.36$ #

(c) $P(X<0.7 \mid X \geq 0.5)$

$$= \frac{\int_{0.5}^{0.7} 2(1-x)\,dx}{1-0.75} = \frac{2x - x^2 \Big|_{0.5}^{0.7}}{0.25} = 0.64$$

#3.40

(a) $g(x) = \int_0^1 \frac{2}{3}(x+2y)\,dy = \frac{2}{3}(xy+y^2)\Big|_0^1 = \frac{2}{3}(x+1)$ #

(b) $h(y) = \int_0^1 \frac{2}{3}(x+2y)\,dx = \frac{2}{3}(\frac{1}{2}x^2+2yx)\Big|_0^1 = \frac{1}{3}(1+4y)$ #

(c) $P(X<\frac{1}{2}) = \int_0^{\frac{1}{2}} g(x)\,dx = \int_0^{\frac{1}{2}} \frac{2}{3}(x+1)\,dx = \frac{2}{3}(\frac{1}{2}x^2+x)\Big|_0^{\frac{1}{2}} = \frac{5}{12}$ #

#3.50

(a)

x	2	4
$g(x)$	0.4	0.6

(b)

y	1	3	5
$h(y)$	0.25	0.5	0.25