3.43) a) Continued from previas attempt

$$4\int_0^{1/2} x\,dx \int_{1/4}^{1/2} 4\,dy = 4\left(\frac{1}{8}\right)\left(\frac{1}{4}-\frac{1}{16}\right) = \frac{3}{64}$$

$$= .046875$$

3.37) a) Correcten of Prev attempt

$$f(1,1)+f(1,2)+f(1,3) = 1c+2c+3c = 6c$$
$$f(2,1)+f(2,2)+f(2,3) = 2c+4c+6c = 12c$$
$$f(3,1)+f(3,2)+f(3,3) = 3c+6c+9c = 18c$$

$36c$

$$c = \frac{1}{36}$$

3.37

a) $f(x,y) = cxy \rightarrow 1 = \sum_{x=0}^{x=3} \sum_{y=0}^{y=3} cxy = f(0,0) + f(1,1) + f(2,2) + f(3,3)$

$f(0,0) + f(0,1) + f(0,2) = 0$

$f(1,0) + f(1,1) + f(1,2) = 0 + c + 2c = 3c$

$f(2,0) + f(2,1) + f(2,2) = 0 + 2c + 4c = 6c$ } $\rightarrow 18c \rightarrow c = \frac{1}{18}$

$f(3,0) + f(3,1) + f(3,2) = 0 + 3c + 6c = 9c$

3.43

a) $f(x,y) = 4xy$

$4\int_0^{1/2} x\,dx \int_0^{1/4} 4\,dy = 4\left(\frac{x^2}{2}\frac{y^2}{2}\right) = \left(4\left(\frac{\frac{1}{2}}{2}\right)\left(\frac{\frac{1}{4}}{2}\right)^2\right) = \left(\frac{1}{2}\right)\left(\frac{1}{2}\right)$

$4\left(\frac{1}{8}-0\right)\left(\frac{1}{32}-0\right) = \frac{4}{256} = \boxed{\frac{1}{64}}$

$\frac{1}{8} \cdot \frac{1}{32} = 256$

$\frac{4}{256} = \frac{1}{64}$

3.49

a,b)

$f(x,y)$	1	2	3	
1	.05	.05	.1	.2
y 3	.05	.1	.35	.5
5	.00	.2	.1	.3
	.1	.35	.55	1

c) $\frac{P(y|x)}{P(x)} = \frac{.1}{.35} = .286$

3.54

$f(2,3) = .1$

$x = .35$ } $xy = .19$ } dependent

$y = .5$

$f(2,3) \neq xy$

3.5

a) $x = c(x^2+4)$; $\sum_{x=0}^{x=3} c(x^2+4) = c[(4)+(5)+(8)+(13)] = c(30)$

$1 = c(30)$ $c = \frac{1}{30}$

$\boxed{C = \frac{1}{30}}$

b) $c\binom{2}{x}\binom{3}{3-x}$; $1 = \sum c\binom{2}{x}\binom{3}{3-x} = c[(1)(1)+(2)(3)+(1)(3)]$

$= c(1+6+3)$

$= c(10)$

$\boxed{C = \frac{1}{10}}$

3.7

a) 100 hrs = 1 ; 120 hrs = 1.2

$\int_0^1 x\,dx + \int_1^{1.2}(2-x)\,dx \rightarrow \frac{x^2}{2} + \frac{2x-x^2}{2}$

$\frac{x^2}{2}\Big|_0^1 + 2x - \frac{x^2}{2}\Big|_1^{1.2} = \left[\frac{1}{2} - 0\right] + \left[\left((2\times 1.2) - \frac{1.2^2}{2}\right) - \left(2 - \frac{1}{2}\right)\right]$

$= .68$

b) $\int_{1/2}^1 x\,dx = \frac{x^2}{2}\Big|_{1/2}^1 = \frac{1}{2} - \left(\frac{1}{8}\right) = .375$

3.13

$f(x) = \begin{pmatrix} f(0) & 1 \\ f(0)+f(1) & \\ f(0)+f(1)+f(2) & \\ \downarrow & \end{pmatrix} = \begin{pmatrix} 0 & x<0 \\ .410 & \leq x<1 \\ .781 & \leq x<2 \\ .942 & \leq x<3 \\ .993 & \leq x<4 \\ 1 & x\geq 4 \end{pmatrix}$