

作业纸

课程名称: 概率论

班级:

教学班级: 08012204

姓名: 俞乐梅

学号: 9120221303

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二. 1.

$X_1 \backslash X_2$	0	1	2
0	$\frac{2}{15}$	$\frac{1}{9}$	$\frac{1}{45}$
1	$\frac{2}{9}$	$\frac{2}{9}$	$\frac{1}{18}$
2	$\frac{2}{45}$	$\frac{1}{18}$	0

$$\therefore P = \frac{16}{45}$$

$$4. (1) P(Z=m | X=h) = C_h^m p^m (1-p)^{n-m}$$

$$(2) P(Y=m, X=h) = C_h^m p^m (1-p)^{n-m} \frac{e^{-\lambda} \lambda^n}{n!}$$

$$I. \int_0^2 dx \int_0^{\infty} A x e^{-y} dy = 1$$

$$(1) \therefore \int_0^{\infty} e^{-y} dy = 1 \Rightarrow A = \frac{1}{2}$$

$$(2) P(X < Y)$$



$$P = \int_0^2 dx \int_0^{\infty} \frac{1}{2} x e^{-y} dy = \frac{1}{2} - \frac{3}{2} e^{-2}$$

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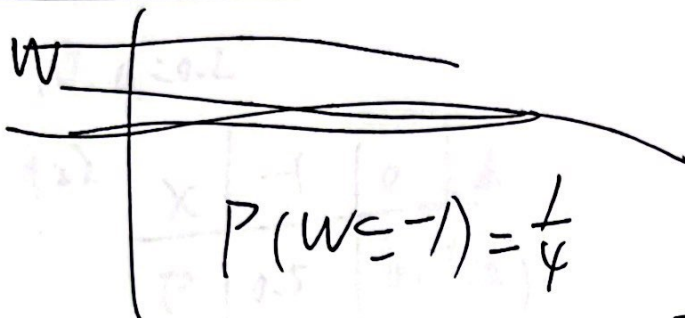
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8.



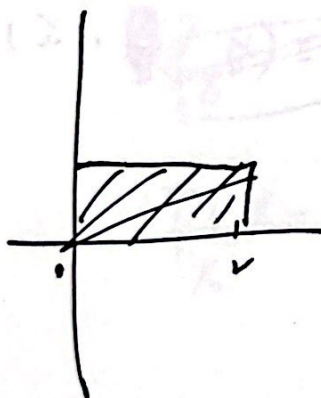
$$P(W = -1) = \frac{1}{4}$$

$$P(W \leq 1) = \frac{3}{4}$$

$$P(W > 1) = \frac{1}{4}$$

$W \backslash V$	-1	1
-1	0.25	0.5
1	0	0.25

9.



$X \backslash Y$	0	1
0	0.15	0.25
1	0	0.25

10.

$$F_X(x) = \lim_{y \rightarrow \infty} F(x, y) = \begin{cases} 0, & x \leq 0 \\ 2x - x^2, & 0 < x \leq 1 \\ 1, & x > 1 \end{cases}$$

$$F_Y(y) = \lim_{x \rightarrow \infty} F(x, y) = \begin{cases} 0, & y \leq 0 \\ y^2, & 0 < y \leq 1 \\ 1, & y > 1 \end{cases}$$

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11. (1). $a=0.2$

(2).

X	-1	0	2
P	0.5	0.4	0.1

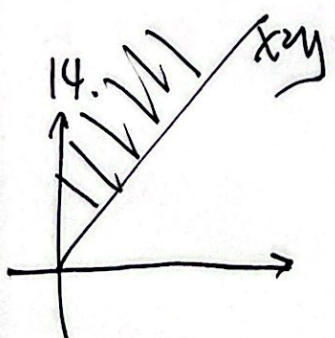
Y	1	2
P	0.6	0.4

(2). ~~$P(X) = P$~~

$$P(X=n) = \sum_{m=1}^{+\infty} \frac{e^{-14} (7.14)^m (0.8)^{n-m}}{m! (n-m)!}$$

$$= \frac{14^n}{n!} e^{-14}, \quad n \in \mathbb{N}$$

$$P(Y=m) = \frac{7.14^m}{m!} e^{-7.14}, \quad m \in \mathbb{N}$$



$f_X(x) = \int_{-\infty}^{+\infty} f(x,y) dy = \int_x^{+\infty} e^{-y} dy = e^{-x}, \quad x > 0$
 $f_Y(y) = \int_{-\infty}^{+\infty} f(x,y) dx = \int_0^y y e^{-y} dx = y e^{-y}, \quad y > 0$

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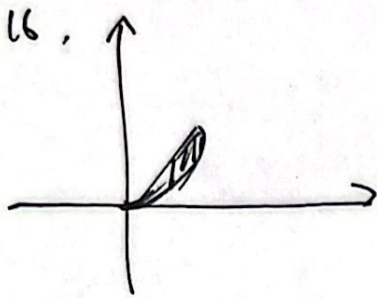
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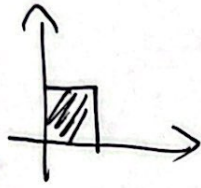
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$$\therefore f_X(x) = \int_{\text{other}} 6 \, dy = \begin{cases} 6(x^2 - x^3) & x \in (0, 1) \\ 0 & \text{其他} \end{cases}$$

$$f_Y(y) = \int_{\text{other}} 6 \, dx = \begin{cases} 6(\sqrt{y} - y) & y \in (0, 1) \\ 0 & \text{其他} \end{cases}$$



17. 求 $f_1(x, y)$.

$$f_{1X}(x) = \int_0^1 xy \, dy = \left(xy + \frac{1}{2}y^2 \right) \Big|_0^1 = x + \frac{1}{2} \cdot 2x = \begin{cases} x + \frac{1}{2} & 0 < x < 1 \\ 0 & \text{其他} \end{cases}$$

$$f_{1Y}(y) = \int_0^1 xy \, dx = \begin{cases} y + \frac{1}{2} & 0 < y < 1 \\ 0 & \text{其他} \end{cases}$$

$$f_{2X}(x) = \int_0^1 (0.25 + 0.5x + 0.5y + xy) \, dy = \begin{cases} x + \frac{1}{2} & 0 < x < 1 \\ 0 & \text{其他} \end{cases}$$

$$f_{2Y}(y) = \begin{cases} y + \frac{1}{2} & 0 < y < 1 \\ 0 & \text{其他} \end{cases}$$

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