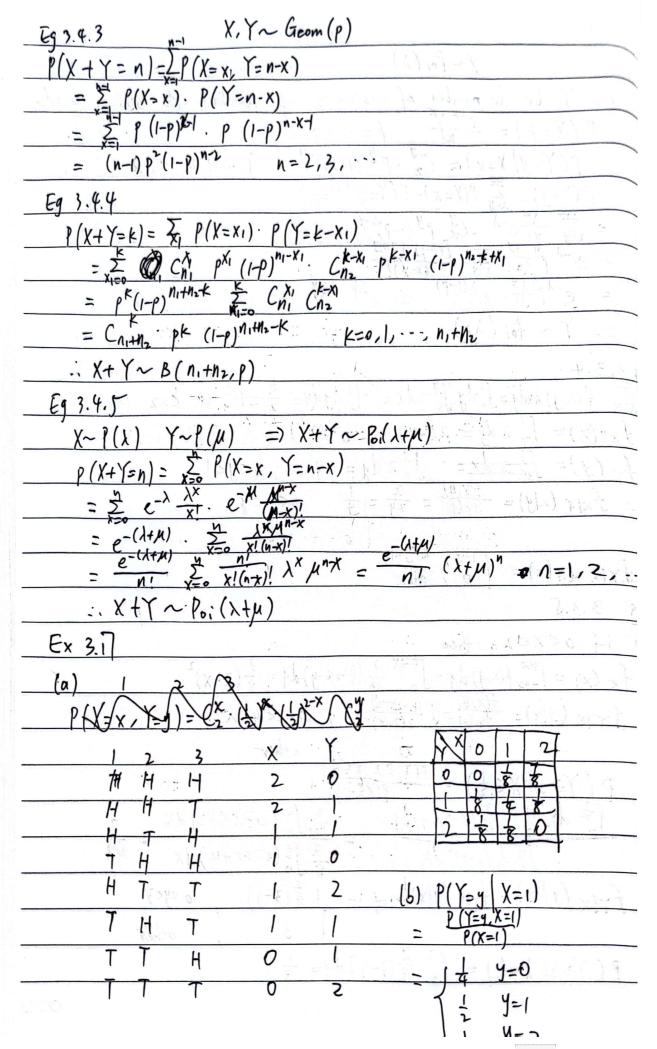
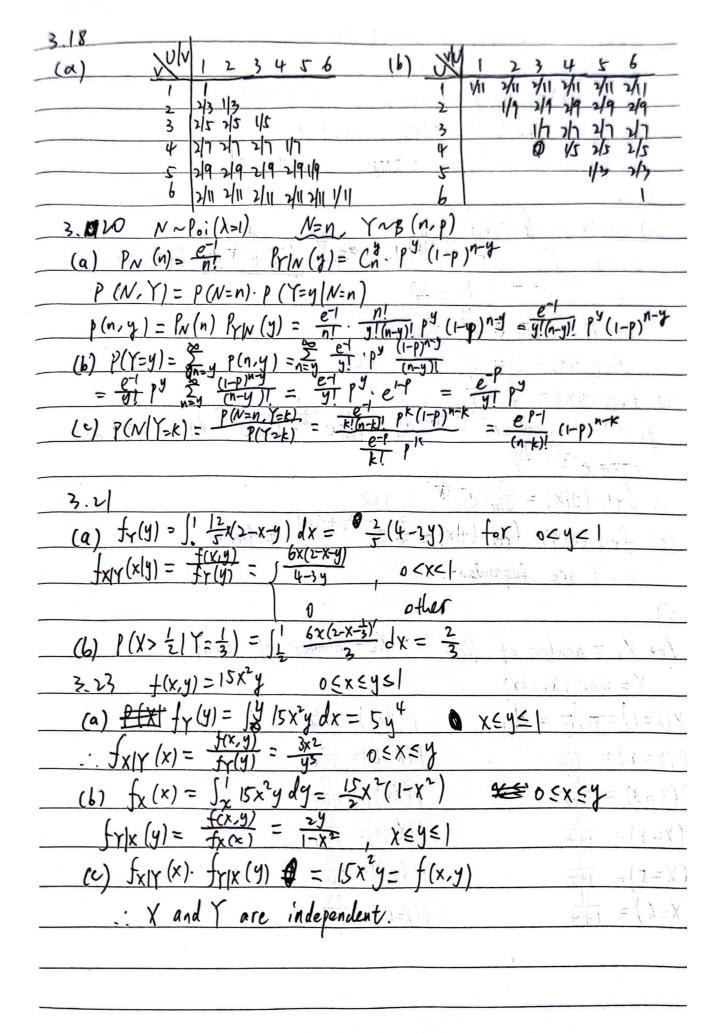
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HW II
                    X~ Poi (x)
69 3.3.3
           be the number of customers who parchase the certain goods
                               k = 0, 1, 2,
       P(Y=y) = \sum_{x=y}^{\infty} P(X=x) \cdot P(Y=y \mid X=x)
                      Cx_ py (1-p)x-4:
                                   exp
          Y~ Poi ( Ap)
 Eg 3.3.4
                                         ky dy=
                                        0 < X < 1
                \frac{1}{x} 2 dy = 2(1-x)
                                2 dy = 24
                                                    0<4<
                                                0<x<4
                                                  other
     = (x) (y) =
                               other
   E9 3.3.5
  (a) if o<x<2, then
                                \frac{4-2x}{76} \frac{3}{16} (4-2x-y) dy = -
      f_{x}(x) = \int_{-\infty}^{+\infty} f(x,y) dy =
                                                   other
                  7. (4-2x-y) dy
                                                       (2x- 4X+2) dx
                                                    (x-4x+4) dx
                  \int_{0}^{\frac{1}{2}} \frac{3}{8} (2-x)^{2} dx
                                                   = (3-9)
        frix (9/2) = frix (9/x)
                                                                    0 < 9<3
                                                                       other
                                (3 = (3-4) dy= =
```





3.25 X~U(0,1) X=x Y~U(0,x)
(a) $f_X(x) = 1$ $f_{Y X}(y x) = \frac{1}{x}$
$f(x,y) = f_X(x) \cdot f_{Y X}(y x) = \frac{1}{x} \qquad 0 < y < x < 1$
(b) fr(y) = y tx dx = - ny ocy < 1
(c) $\int_{X Y} (x y) = \frac{f(x,y)}{f(y)} = -\frac{1}{x \ln y}$ ocycx<
3.26
f(x,y)
$f_{Y}(y) = \int_{-\infty}^{+\infty} \frac{1}{12\pi} e^{-\left(\frac{x}{8} + \frac{y^{2}}{18}\right)} dx = \underbrace{\frac{y^{2}}{12\pi}} \int_{-\infty}^{+\infty} e^{-\frac{x^{2}}{8}} dx \text{ Let } t = 2x$
$A = \int_{-60}^{+60} e^{-\frac{t^2}{2}} \frac{1}{2} dt = \frac{\sqrt{37}}{2}$
· fr(y) = 24/1 e 18 127 2
$\int_{X Y} (x y) = \int_{\overline{T}}^{2\pi} e^{-\frac{x^{2}}{8}} x \in \mathbb{R}$
1/4 (1)
$\frac{(b) f_{Y X}(y x) = \frac{f(x,y)}{f_{X}(x)} =$
= 1217 e-8 217
: fylx(J X) = 3 e - 18 yek
(c) $f_{X Y}(x y) \cdot f_{Y X}(y x) = \frac{3}{\pi}e^{-(\frac{x}{2}+\frac{1}{16})} \neq f(x,y)$
: X, Y are dependent.
~3.2]
Let X, = number of first Xz = number of second.
X = max {X1, X2}
$P(X=1) = \frac{1}{12 \times 12} = \frac{1}{194}$ $P(X=7) = \frac{13}{194}$
$P(X=2) = \frac{3}{144}$ $P(X=8) = \frac{11}{144}$
$P(X=3) = \frac{5}{144}$ $P(X=9) = \frac{17}{144}$
$P(X=Y) = \frac{7}{144} \qquad P(X=10) = \frac{19}{144}$
$P(X=I) = \frac{9}{144}$ $P(X=II) = \frac{21}{144}$
$P(X=6) = \frac{11}{144}$ $P(X=12) = \frac{23}{144}$

Ho)

2.28 X~Geom(P) Y=min {X,M}
$P(X=k) = (I-P)^{k-1} \cdot P$
P(Y=y)= 1(1-p)m-1.p yam
$P(Y=y) = \int (1-p)^{m-1} \cdot p y \leq m$ $(1-p)^{y-1} \cdot p y \leq m$
3.36 X, On Poi (1) Y~Poi(4) Let Z=X+Y~Poi(5)
$Var(X) + Var(Y) = \lambda + \mu = 5$
P (MIXCE) =
P(X+Y<2)=P(2<2)=P(Z=0)+P(Z=1)=e-5+5-5=60-5
(11111111111111111111111111111111111111
•