210x4 KZM MA HODZOZA

(1001) Continuou random variable

This is a type of variable that

takes an infinite number of possible

values within a given range.

They are typically associated with

measurements such as time, hight

weight, or temperature.

Example: Richy is 1.2 m tall.

Richy's height is 1.2. The number is a

Completed on variable.

(i) Expectation
This returns to the Longeron average
value of repetitions of the experiment
it represents. It gives the possible
out comes:

b) Coin toss experiment.
-Sample Space = & (Heads Tails)
- Let X be to random variable

X = [0-] + 491/ abbreus

The value of X can be 0 or 1 $P(X=1) = 0.5, P(x=0) = 0.5 / M_{\odot}$

Vistoi button

$$E(x) = 2 \cdot \frac{1}{6} + 1 \cdot \frac{1}{6} + (-1) \cdot \frac{4}{6}$$

d) The random variable X has probability density
function

Find the mean and median
Find P(x > 0.5) and Var(20)

Mean
$$V = E(X) = \int_{0}^{1} \chi(3.6x - 2.42^{2}) dx$$

$$= \int_{0}^{1} (3.6x^{2} - 2.4x^{3}) dx$$

$$= (3.6) \frac{1}{3} - (2.4) \frac{1}{4} = 1.2 - 0.6$$

$$= 0.6 Arsing$$

Variona
$$V_{ax}(X) = E(X) - [E(X)]^{2}$$

$$E(X) = \int_{0}^{1} \chi^{2}(3.6x - 2.4x^{2}) dx$$

$$= \int_{0}^{1} (3.6x - 2.4x^{2}) dx$$

$$= 3.6 (\frac{1}{4}) - 2.4 (\frac{1}{5})$$

$$= 0.9 - 0.48 = 0.42$$

$$V_{ax}(X) = 0.42 - (0.6)^{2}$$

$$= 0.42 - 0.36$$

$$= 0.06 \qquad \text{An sum}$$

2) Number of Scents = 100 Number of tracks sold = 110 Probability a passenger not showing up = 1-0.05 = 0.95 Let X be number shows up X~ Burnial (n=110, P=0.95 P(2(>h0)=? Binomia Distribution X~N(H, 52) 1 = np= 110 x 0.95 = 104.5 Q = {\n/(1-b) = 1110\times 0.95\times 0.02 = \langle 2.552 = 5.59 P(2>100) = P(2>100.5-104.5) Approximation = P(Z>-1.75) Standard romal tall P(Z>-1.75)=1-P(Z<-1.75) · = 1-0.0401 = 0.9599

b) The number of claims
$$\chi \sim \text{Poisson}(\lambda)$$

$$P(\chi=2)=3\times P(\chi=4)$$

Show lard desiration of $\chi=2$

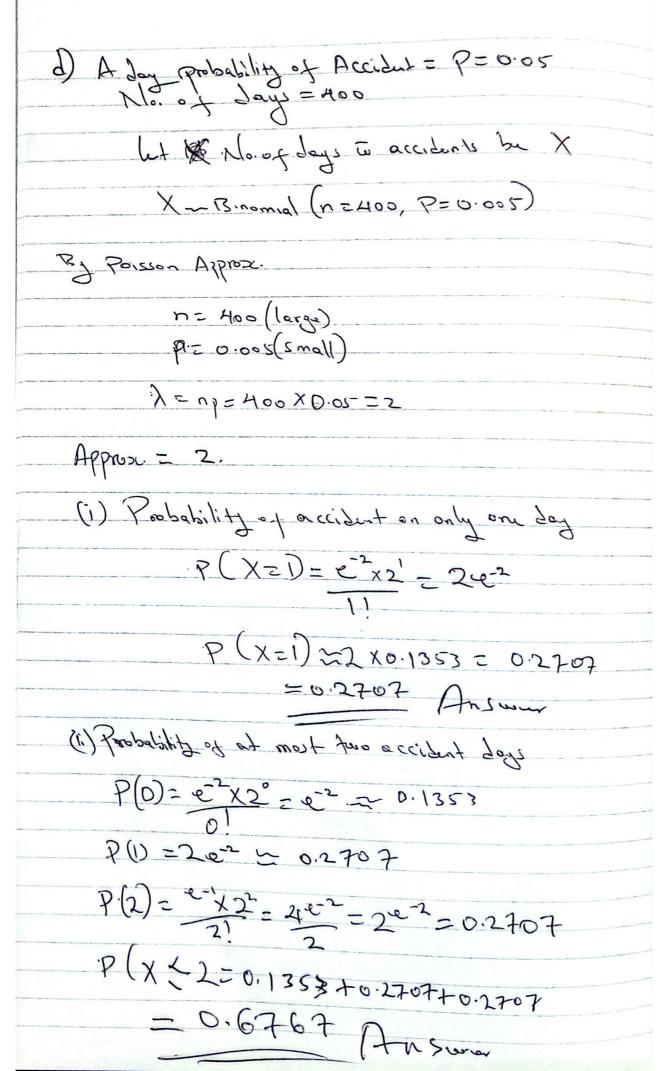
$$P(\chi=k)=\frac{e^{-\lambda}\chi^{k}}{k!}$$

Private $\chi=3$

$$\chi=3$$

$$\chi=$$

Samp n=800 Probability of defective: P=0.04 X=75 Binomial (n=800\$ PZ0.04) Large = n Small = ? moderate = np =1 X= 200 X0.04 = 32 Approx D=32 P(X=75) P(X=14)= e + 1/1 = P(X=75)= e-32 x 3275 751 = P(X=75)=1.46×10-14 Ans



H = 20 (0.15) + 30 (0.10) + A0 (0.005) + 50 (0.20) + 60 (010) + 70 (0.10) + 80 (0.30)

= 3.00 + 3.00 + 2.00 + 10.00 + 6.00 + 20.00 + 24.00

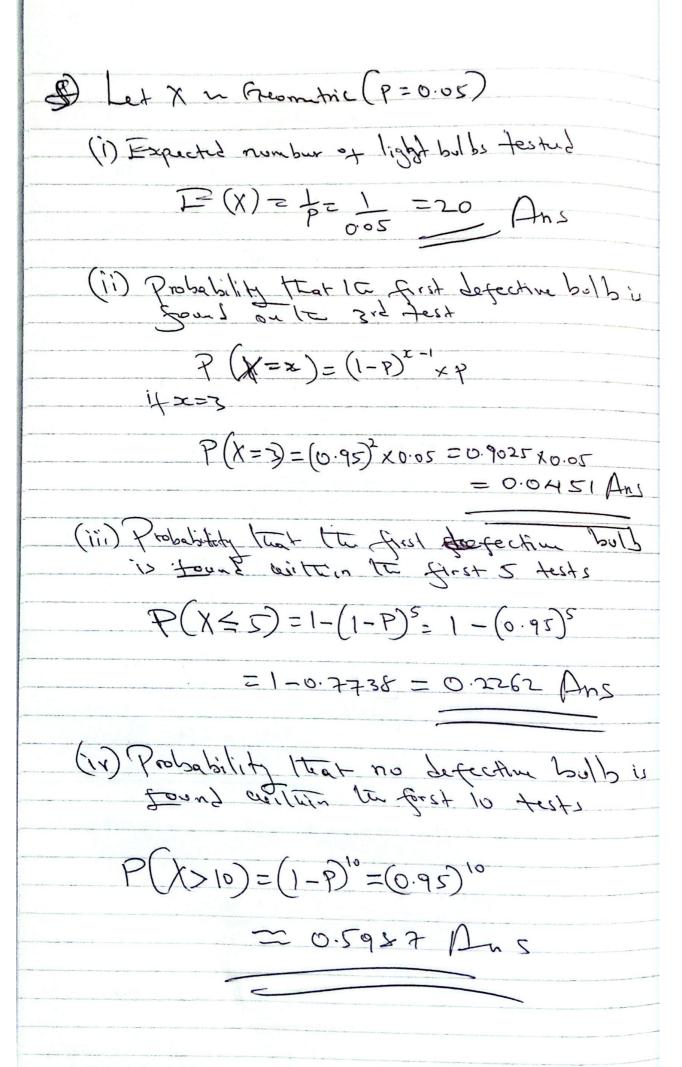
Variance 0= \(\int (20-55)^2 \times 0.15=122.25. ----

122.25 + 62.5 + 11.25 + 5.0 + 2.5 + 22.5 + 187.5 $6 = 413.5 \approx 20.33$

Rangus
34.67 - 75.33 15 40,50,60, 70
Pf 40)+P(50)+P(60)+P(70) =

= 6.05+6.20+0.10+0.10 = 6.45

= 45% Ans.



$$P\left(\chi=10=\binom{9}{2}\times(0.2)^3\times(0.8)^7\right)$$

$$P(X \leq N)$$
 $\sum_{n=3}^{N} P(X = n) = P(X \leq 12$