homework 05 and homework 06

Section 3.3

Ex. 29.

(a) $E(x) = \sum_{x \in D} x p(x) = |x \circ .05 + 2 \times 0.10 + 4 \times 0.35 + 8 \times 0.40 + 16 \times 0.10 = 6.45 GB$

(b) V(x)= \(\sum_{\text{xep}} (x-\mu)^2 p(x) = (1-6.45)^2 \(\cdot 0.05 + (2-6.45)^2 \(\cdot 0.05 + \cdot \cdot \cdot \) + (16-6.45)^2 \(\cdot 0.10 = 15.6475 \) GB

(c) 6 = VOVEN = 3.956 GB

(d) $E(x^2) = \sum_{x \in X} P(x) = 57.25$; $E(x)^2 = 6.45^2$ $V(x) = E(x)^2 = 57.25 - (6.45)^2 = 15.6475$

Ex. 33

(a) E(x2) = 02(1-p) + 12p=p

(b) V(x) = (0-p)(1-p) + (1-p)(p) = P(1-p)

(c) $E(x^{19}) = p$, it is the same as question (a)

Ex (38.)

Solution: E(hx E(hw) = E(x) = 5x p(x) = 0.408

as for: 1/3.5 = 0.286 < E(\$), so if a gamble, a win win more as expected

Ex(41.)

Proof: $V(ax+b) = \Sigma (ax+b - E(ax+b)^2 f(x))$ = $\Sigma (ax+b - aE(x) = 0$

= Σ (ax+b- αΕ(x))-P(x) = Σ (ax-αΕ(x)2. p(x)

= alex (x-E(x)2.px)

 $= a^2 \cdot V(x)$

 $= \alpha^2 \delta_X^2$



Section 3.4

Ex.(46.)

Ex.47

Ex.48

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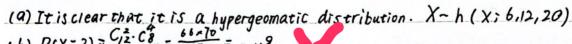


Ex. 54 Let X denote the number of people who buys an oversized racket. (a) P(X26) = 1-P(X<6) = 1-B(5;10,0.6) = 1-0.367 = 0.637

(b)
$$E_{(X)}=np=10\times0.6=6$$
, $\sigma=\sqrt{np_{(1-p)}}=1.55$ so the range is (4.45, 7.55)
 $P(4.45< X<7.75)=B(7;10,0.6)-B(4;10,0.6)=0.667$

(c) This situation can be expressed like: P(3=X=7) = B(7,10,0.6) - B(2,10,0.6) = 0.667

Section 3.5 Ex.68.



(b)
$$P(X=2) = \frac{C_{12} \cdot C_{8}^{2}}{C_{20}^{2}} = \frac{66-70}{38760} = 0.119$$

 $P(X=2) = P(X=0) + P(X=1) + P(X=2) = \frac{C_{12} \cdot C_{8}^{2}}{C_{20}^{2}} + \frac{C_{12} \cdot C_{8}^{2}}{C_{20}^{2}} + P(X=2) = 0.137$
 $P(X7.2) = 1 - P(X \le 1) = 0.982$

 $V(x) = \frac{6 \times 12(20-6)(20-12)}{20^2(20-1)} = 1.06$ (c) $E(x) = n \cdot \frac{M}{N} = 6 \times \frac{12}{20} = 3.6$; (x)= V(x) = 1.03

$$E_{X} 69.$$
(a) $P(X=5) = \frac{C_{1}^{7} \cdot C_{2}^{4}}{C_{1}^{4}} = 0.114$

(b)
$$P(X \le 4) = 1 - P(X = 5) - P(X = 6) = 1 - 0.114 - \frac{C7 \cdot C5}{C6} = 6.87$$

(b)
$$P(X \le 4) = 1 - P(X = 5) - P(X = 6) = 1 - 0.114 - \frac{27.65}{Ch_2} = 6.87$$

(c) $E(X) = 6 \times \frac{7}{12} = 3.5$; $V(X) = \frac{76(12-6) \cdot (12-7)}{(12-1)} = 0.795$; $G_X = \sqrt{V(X)} = 0.89 = \frac{1}{12}$

P(X>K+0) = P(X74.392) = P(X=5) + P(X=6) = 0.12/

(d) View it as a binomial distribution P(X=5) = B(5715,0.1) = 0.998

Ex.72.

(b) E(x)=6×4 =218, 2.18 as expected will be interviewed at 15t day.



[1.1]. Itis a negative Binomial distribution

El Section 3.6

Ex. 84.

(a)
$$\mu = np = 10000 \times 100 = 100 = 6 = 100 = 10000 \times 0.00 \times$$

Ex.86

Ex. 87

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