CA3 - Expectation, Variance, and Gallery of Discrete Random Variables

Add Instructions...

1 Multiple Choice   3 points

Suppose you studied hard for a 100-question multiple-choice exam (with 4 choices per question) so that you believe you know the answer to about 80% of the questions, and you guess the answer to the remaining 20%. What is the expected number of questions you answer correctly?

- ● 85
- ○ 80
- ○ 25
- ○ None of these above

2 Numeric 5 points

Suppose we have a random variable X with PMF:

$$p_X(k) = \begin{cases} 1/100 & k = -2 \\ 18/100 & k = 0 \\ 81/100 & k = 2 \end{cases}$$

Compute Var(X).
Please give your answer to two decimal places.

0.72

3 Matching 5 points

Match the discrete random variables to their respective expectations

X ~ Binomial(n, p)	——————	E[X]=np	⌄
X ~ Bernoulli(p)	——————	E[X]=p	⌄
X ~ Geo(p)	——————	E[X]=1/p	⌄
X ~ NegBin(r, p)	——————	E[X]=rp	⌄

Possible answers

⁞ E[X]=np   ⁞ E[X]=rp   ⁞ E[X]=p   ⁞ E[X]=1/p

4 Multiple Choice 4 points

The number of products manufactured in a factory in a day is 3500 and the probability that some pieces are defected are 0.55. The expected number of defected products in a day is:

- ◉ 1925
- ○ 6364
- ○ 3500
- ○ 63.64

5 True or False 3 points

A Negative Binomial(r, p) random variable can be expressed as a sum of r Geometric(p) random variables. This statement is

- ◉ True
- ○ False