Assignment 7

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

1) Let $X$ be a random variable, in what sense $X_n$ converges to $0$?

- $X_n \to X$ in distribution
- $X_n \to X$ in probability
- $X_n \to X$ in mean square
- $X_n \to X$ in distribution of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:

- Mean Square

2) Consider a sequence $X_n, n = 1, 2, 3, \ldots$ such that

- $X_n \to X$ with probability $\frac{1}{2}$
- $X_n \to Y$ with probability $\frac{1}{2}$

In what sense does it converge?

- Mean square sense to $X$
- Mean square sense to $Y$
- Probability sense to $X$
- Probability sense to $Y$

No, the answer is incorrect.
Score: 0
Accepted Answers:

- Mean Square

3) Given a communication system, where each data packet consists of 1000 bits. Due to the noise, each bit may be received in error with probability 0.1. It is assumed in errors occur independently. What is the probability that there are more than 120 errors in a certain data packet?

No, the answer is incorrect.
Score: 0
Accepted Answers:

- Typo (0.017)

4) The lifetime of a special type of battery is a random variable with mean 65 hours and standard deviation 25 hours. A battery is used until it fails, at which point is replaced by a new one. Assuming a sequence of its such batteries, the lifetime of which are independent, approximates the probability that over 1100 hours of use can be obtained?

No, the answer is incorrect.
Score: 0
Accepted Answers:

- Typo (0.017)

5) Let $X_1, X_2, \ldots, X_n$ be i.i.d. with the following PDF.

$$P_{X_i}(x) = \begin{cases} 0.6 & (i = 1) \\ 0.4 & (i = 2) \\ 0 & \text{(otherwise)} \\ \end{cases}$$

And let $Y = X_1 + X_2 + \ldots + X_n$. Using the CLT estimate $P(3.5 \leq Y \leq 6.5)$

No, the answer is incorrect.
Score: 0
Accepted Answers:

- Typo (0.5)

6) You have invited 50 guests for a party. You need to make sandwiches for the guests. You believe that a good might need 5 or 6 sandwiches with probability 0.5, 0.4, and 0.1 respectively. You assume that the number of sandwiches each guest needs is independent from other guests. How many sandwiches should you make so that you are 80% sure that there is no shortage?

No, the answer is incorrect.
Score: 0
Accepted Answers:

- Typo (0.5)

7) Let $X_1, X_2, \ldots, X_n$ be i.i.d. Exponential (2) random variables with $N = 1$. Let

- $x \geq 183$
- $x \geq 365$
- $x \geq 384$
- $x \geq 384$

No, the answer is incorrect.
Score: 0
Accepted Answers:

- 0.5505

8) There are 40 men on a plane. Let $X_i$ be the weight (in pounds) of the $i$th man on the plane. Suppose that the $X_i$ are i.i.d., with mean 170 and standard deviation 30. What is the probability that the total weight of the men on the plane exceeds 10,000 pounds?

No, the answer is incorrect.
Score: 0
Accepted Answers:

- Typo (0.5)