Unit 9 - Week 8

Assignment 8

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

Due on 2020-03-25, 23:59 IST.

1) If X and Y are independent normal random variables with mean 0 and variance 1, what is the distribution of X+Y? *1 point*

- N(0,2)
- N(1,2)
- N(0,1)
- N(1,1)

No, the answer is incorrect.
Score: 0
Accepted Answers:
N(0,2)

2) Let X and Y be two independent Geometric(p) random variables. Find $E(\frac{X}{Y})$ *1 point*

- $\frac{1}{p}$
- $\ln(p)$
- $\frac{1}{1-p}$
- $\ln(\frac{1}{p})\frac{1}{1-p}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\ln(\frac{1}{p})\frac{1}{1-p}$

3) Suppose that the number of customers visiting a fast food restaurant in a given day follows Poisson(λ) . Assume that each customer purchases a drink with probability p , independently from other customers . Let X be the number of customers who purchase drinks. Let Y be the number of customers that do not purchase drinks. Find $E[X^2Y^2]$. *1 point*

- pq
- $\lambda^2pq(\lambda^2pq+\lambda+1)$
- $\lambda^2pq(\lambda^2+\lambda+1)$
- $\lambda^2pq(\lambda^2pq+\lambda+p+q)$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\lambda^2pq(\lambda^2pq+\lambda+1)$

4) Let $X_1, X_2, ..., X_n$ be independent U(0,1) random variables. Find the $E(\min(X_1, X_2, ..., X_n))$ *1 point*

- $\frac{1}{n+1}$
- $\frac{n}{n+1}$
- 0.5
- 0.3

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{1}{n+1}$

5) Which of the following is/are correct for a t-distribution with 10 degrees of freedom? *1 point*

- There are more scores in the tails of a t distribution than in a standard normal distribution
- There are more scores in the center of a t distribution than in a standard normal distribution
- There are equal scores in the center of a t distribution and a standard normal distribution
- There are equal scores in the tails of a t distribution and a standard normal distribution

No, the answer is incorrect.
Score: 0
Accepted Answers:
There are more scores in the tails of a t distribution than in a standard normal distribution

6) What is the expectation of a t distributed random variable with 5 degrees of freedom? *1 point*

- 5
- 15
- 10
- 0

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

7) What is the mean of a chi squared random variable with n as the degress of freedom? *1 point*

- n
- 2n
- n/2
- 1

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

8) Imagine that you sample 3 scores from a standard normal distribution, square each score, and sum the squares. What is the probability that the sum of these 3 squares will be 9 or higher? You may use the following values $P(X \geq 9) = 0.4373$, where $X \sim \chi^2_9$, $P(X \geq 9) = 0.0293$, where $X \sim \chi^2_3$, $P(X \geq 9) = 0.1736$, where $X \sim \chi^2_6$, $P(X \geq 9) = 0.0027$, where $X \sim \chi^2_1$. *1 point*

- 0.4373
- 0.0293
- 0.1736
- 0.0027

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.0293

9) Which of the following is/are true? *1 point*

- F distributed random variable can only take positive values and is symmetric around the mean
- F distributed random variable can only take positive values and is positively skewed
- F distributed random variable can take both positive and negative values
- F distributed random variable can only take positive values and is negatively skewed

No, the answer is incorrect.
Score: 0
Accepted Answers:
F distributed random variable can only take positive values and is positively skewed

10) Which of the following is true? (If X is F(n,m), then $P(X \leq F_{n,m;\alpha}) = \alpha$) *1 point*

- $F_{n,m;\alpha} = \frac{1}{F_{m,n;1-\alpha}}$
- $F_{n,m;\alpha} = F_{m,n;1-\alpha}$
- $F_{n,m;\alpha} = \frac{1}{F_{n,m;1-\alpha}}$
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
$F_{n,m;\alpha} = \frac{1}{F_{m,n;1-\alpha}}$