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Courses » Probability and Statistics

Announcements

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Unit 8 - Week 6

Register for Certification exam

Course outline

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Week 6

- Lecture 35 : Joint Distributions-I
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- Lecture 37 : Independence, Product Moments
- Lecture 38: Linearity Property of Correlation and Examples
- Lecture 39 : Bivariate Normal Distribution-I
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Assignment 6

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

Due on 2019-03-13, 23:59 IST

1) Let X follows a uniform distribution $U[-1, 1]$. Let $Y = -2 \log |X|$. Find the $E(Y)$. 0 points

- a. $\frac{1}{2}$
- b. $\frac{1}{3}$
- c. $\frac{2}{3}$
- d. $\frac{3}{8}$

- a
- b
- c
- d

No, the answer is incorrect. Score: 0

Accepted Answers: a

2) Let X and Y be two continuous random variables with joint density 1 point

$$f(x, y) = \begin{cases} k(1-x-y), & x > 0, y > 0, x + y = 1 \\ 0 & \text{otherwise} \end{cases}$$

Find $E\left(X \mid Y = \frac{1}{2}\right)$.

- a. $\frac{1}{4}$
- b. $\frac{1}{5}$
- c. $\frac{1}{6}$
- d. 1

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Assignment
Solution d

No, the answer is incorrect.

Score: 0

Accepted Answers:

c

3)

Let X and Y be two continuous random variables with joint density

$$f(x, y) = \begin{cases} x + y, & 0 \leq x \leq 1, 0 \leq y \leq 1 \\ 0 & \text{otherwise} \end{cases}$$

Find $P(Y < X)$.

a. $\frac{1}{2}$

b. $\frac{1}{3}$

c. $\frac{1}{4}$

d. $\frac{1}{5}$

 a b c d

No, the answer is incorrect.

Score: 0

Accepted Answers:

a

4)

Let X and Y be two independent random variables with joint density

$$f(x, y) = \begin{cases} 1, & 0 \leq x \leq 1, 0 \leq y \leq 1 \\ 0 & \text{otherwise} \end{cases}$$

Find the $P(X + Y < k)$, where $0 < k < 1$.

a. $\frac{k^2}{2}$

b. $\frac{k^2}{3}$

c. $\frac{k^2}{4}$

d. k^2

 a b c d

No, the answer is incorrect.

Score: 0

Accepted Answers:

a

5)

1 point



1 point

1 point

Let X and Y be two independent normal variables with means 2, 3 and variance 4, 9 respectively. Determine the value of λ such that $P(X + Y \leq \lambda) = P(2X - Y \geq 2\lambda)$.

a. $\frac{2\sqrt{13} + 25}{7}$

b. $\frac{5\sqrt{13} - 11}{3}$

c. $\frac{3\sqrt{13} - 25}{5}$

d. $\frac{4\sqrt{13} - 17}{7}$

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

6)

1 point

Let (X, Y) be a bivariate normal distribution with joint density

$$f(x, y) = \frac{1}{2\pi\sqrt{3}} e^{-\frac{2}{3}\left[(x-1)^2 + \frac{1}{4}(y+1)^2 - \frac{1}{2}(x-1)(y+1)\right]}, \quad -\infty < x < \infty, -\infty < y < \infty$$

Find the correlation between X and Y .

- a. 0.15
b. 0.25
c. 0.50
d. 0.75

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

c

7)

1 point

Let X and Y be two random variables with joint density

$$f(x, y) = \begin{cases} ce^{-x}(x+y), & x \geq 0, 0 \leq y \leq 1 \\ 0 & \text{otherwise} \end{cases}$$

Find the $P\left(0 < Y < \frac{1}{2} \mid X > 1\right)$.

- a. $\frac{3}{40}$
- b. $\frac{9}{40}$
- c. $\frac{3}{20}$
- d. $\frac{9}{20}$

- a
- b
- c
- d

No, the answer is incorrect.

Score: 0

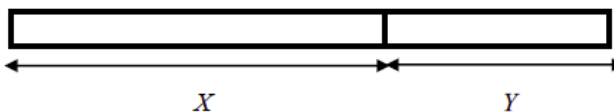
Accepted Answers:

d

8)

1 point

A straight rod consists of two sections X and Y , each of which is manufactured independently on a different machine. The length (in inches) of section X is normally distributed with mean 10 and var 0.3 and the length of section Y is normally distributed with mean 15 and variance 0.2. The rod is for joining the two sections together as shown below:



Suppose that the rod can be used in the construction of an airplane wing if its total length is between 20 to 24.5 inches. What is the probability (approximately) that the rod can be used in the construction?

- a. 0.359
- b. 0.456
- c. 0.215
- d. 0.228

- a
- b
- c
- d

No, the answer is incorrect.

Score: 0

Accepted Answers:

c

9)

1 point

Let X and Y be two random variables with joint density

$$f(x, y) = \begin{cases} e^{-(x+y)}, & x \geq 0, y \geq 0 \\ 0 & \text{otherwise} \end{cases}$$

Let $P(X+Y < m) = \frac{1}{2}$. Then the value of m lies between

- a. 0 and 1
- b. 1 and 2
- c. 2 and 3
- d. 3 and 4

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

10) Let X and Y be two random variables with joint density

$$f(x, y) = \begin{cases} x + y, & 0 < x < 1, 0 < y < 1 \\ 0, & \text{otherwise} \end{cases}$$

Find the $Var(X+Y)$.

- a. $\frac{1}{18}$
- b. $\frac{3}{18}$
- c. $\frac{5}{36}$
- d. $\frac{1}{12}$

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

c

1 point

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End

