

Started on Saturday, 12 December 2020, 3:10 PM
State Finished
Completed on Saturday, 12 December 2020, 4:05 PM
Time taken 54 mins 50 secs
Grade 14.17 out of 25.00 (57%)

Question 1

Not answered
Marked out of 5.00

The joint probability density function of two random variables X and Y is given by

$$f_{X,Y}(x,y) = \begin{cases} e^{-2y} & 0 \leq x \leq 2, 0 \leq y; \\ 0, & \text{otherwise.} \end{cases}$$

Note: $e^1 = 2.718281828$

Find the $P(Y \leq 1.6X)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]

✘

One possible correct answer is: 0.84400961832393

Your answer is incorrect.

Question 2

Incorrect
Mark 0.00 out of 5.00

The joint probability density function of two random variables X and Y is given by

$$f_{X,Y}(x,y) = \begin{cases} e^{-2y} & 0 \leq x \leq 2, 0 \leq y; \\ 0, & \text{otherwise.} \end{cases}$$

Note: $e^1 = 2.718281828$

Find the $Var\{0.6X - 1.4\}$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]

✘

One possible correct answer is: 0.12

Your answer is incorrect.

Question 3

Correct
Mark 5.00 out of 5.00

The joint probability density function of two random variables X and Y is given by

$$f_{X,Y}(x,y) = \begin{cases} K(1-x)(y), & 1 \leq x \leq 3, 0 \leq y \leq 2; \\ 0, & \text{otherwise.} \end{cases}$$

Determine the value of the constant K. [The answer should be a number rounded to five decimal places, don't use symbols such as %]

✔

One possible correct answer is: -0.25

Your answer is correct

Question 4

Partially correct

Mark 4.17 out of 5.00

Suppose that X and Y have the following joint probability distribution:

Joint Probability Mass Function of X and Y

	Y=1	Y=3	Y=5
X=1	0.09	0.12	0.07
X=2	0.14	0.06	0.52

Determine the mean of X (μ_X). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 1.72

Determine the mean of Y (μ_Y). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 3.72

Determine the standard deviation of X (σ_X). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.44899888641287

Determine the standard deviation of Y (σ_Y). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 1.6618062462273

Determine the covariance between X and Y ($\mu_{X,Y}$). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.2416

Determine the correlation coefficient between X and Y ($\rho_{X,Y}$). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.32379585061251

Your answer is partially correct.

You have correctly answered 5 part(s) of this question.

Question 5

Correct

Mark 5.00 out of 5.00

Let X denote the number of times a certain numerical control machine will malfunction: 1, 2, or 3 times on any given day. Let Y denote the number of times a technician is called on an emergency call. Their joint probability distribution is given as

Joint Probability Mass Function of X and Y

	Y=1	Y=3	Y=5
X=1	0.06	0.07	0
X=2	0.08	0.04	0
X=3	0.08	0	0.67

Find the $P(X = 2)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.12

Find the $P(X = 2/Y = 3)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.36363636363636

Find the $F_{X,Y}(2, 3)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.25

Your answer is correct.

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Completed on Saturday, 12 December 2020, 4:05 PM
Time taken 52 mins 21 secs
Grade 15.00 out of 25.00 (60%)

Question 1

Partially correct
Mark 2.50 out of 5.00

The joint probability density function of two random variables X and Y is given by

$$f_{X,Y}(x,y) = \begin{cases} 16e^{-(4x+4y)} & 0 \leq x, 0 \leq y; \\ 0, & \text{otherwise.} \end{cases}$$

Note: $e^1 = 2.718281828$

Find the $P(X \geq 0.6, Y \leq 0.2)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.049955749311046

Find the $P(X \leq 1.6/Y = 1.3)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.99833844272683

Your answer is partially correct.

You have correctly answered 1 part(s) of this question.

Question 2

Incorrect
Mark 0.00 out of 5.00

X and Y are independent random variables, X is a zero-mean unit variance Gaussian random variable, and Y is a uniform random variable in the interval [0.5,3.3].

Find $E[X^2Y]$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 1.9

Your answer is incorrect.

Question 3

Correct

Mark 5.00 out of 5.00

The joint probability density function of two random variables X and Y is given by

$$f_{X,Y}(x,y) = \begin{cases} K & 0 \leq y \leq x \leq 2.4; \\ 0, & \text{otherwise.} \end{cases}$$

Find K so that $f_{X,Y}(x,y)$ is a valid joint pdf. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.34722222222222

Your answer is correct.

Question 4

Partially correct

Mark 2.50 out of 5.00

Suppose that X and Y have the following joint probability distribution:

Joint Probability Mass Function of X and Y

	Y=1	Y=3	Y=5
X=1	0.11	0.13	0.06
X=2	0.15	0.06	0.49

Determine the mean of X (μ_X). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 1.7

Determine the mean of Y (μ_Y). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 3.58

Determine the standard deviation of X (σ_X). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.45825756949558

Determine the standard deviation of Y (σ_Y). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 1.7039953051579

Determine the covariance between X and Y ($\mu_{X,Y}$). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.274

Determine the correlation coefficient between X and Y ($\rho_{X,Y}$). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.35089123628262

Your answer is partially correct.

You have correctly answered 3 part(s) of this question.

Question 5

Correct

Mark 5.00 out of 5.00

Let X denote the number of times a certain numerical control machine will malfunction: 1, 2, or 3 times on any given day. Let Y denote the number of times a technician is called on an emergency call. Their joint probability distribution is given as

Joint Probability Mass Function of X and Y

	Y=1	Y=3	Y=5
X=1	0.06	0.07	0
X=2	0.07	0.08	0.08
X=3	0.04	0	0.6

Find the $P(X = 3)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.64

Find the $P(X = 3/Y = 5)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.88235294117647

Find the $F_{X,Y}(3, 2)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.17

Your answer is correct.

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State Finished
Completed on Saturday, 12 December 2020, 4:05 PM
Time taken 54 mins 42 secs
Grade 23.33 out of 25.00 (93%)

Question 1

Correct
Mark 5.00 out of 5.00

The joint probability density function of two random variables X and Y is given by

$$f_{X,Y}(x,y) = \begin{cases} 3e^{-(3x+1y)} & 0 \leq x, 0 \leq y; \\ 0, & \text{otherwise.} \end{cases}$$

Note: $e^1 = 2.718281828$

Find the $P(X \geq 1.2, Y \leq 0.5)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.010751047045531

Find the $P(X \leq 1.6/Y = 1)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.99177025295098

Your answer is correct.

Question 2

Correct
Mark 5.00 out of 5.00

The joint probability density function of two random variables X and Y is given by

$$f_{X,Y}(x,y) = \begin{cases} 6e^{-(2x+3y)} & 0 \leq x, 0 \leq y; \\ 0, & \text{otherwise.} \end{cases}$$

Note: $e^1 = 2.718281828$

Determine the $E\{XY^2\}$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.11111111111111

Your answer is correct.

Question 3

Correct

Mark 5.00 out of 5.00

The joint probability density function of two random variables X and Y is given by

$$f_{X,Y}(x,y) = \begin{cases} Ke^{-x}e^{-y} & 3 \leq y \leq x < \infty; \\ 0, & \text{otherwise.} \end{cases}$$

Note: $e^1 = 2.718281828$

Find K so that $f_{X,Y}(x,y)$ is a valid joint pdf. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 806.85758698547

Your answer is correct.

Question 4

Partially correct

Mark 3.33 out of 5.00

Suppose that X and Y have the following joint probability distribution:

Joint Probability Mass Function of X and Y

	Y=1	Y=3	Y=5
X=0	0.05	0.1	0.09
X=1	0.09	0.17	0.09
X=2	0.09	0.06	0.26

Determine the mean of X (μ_X). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 1.17

Determine the mean of Y (μ_Y). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 3.42

Determine the standard deviation of X (σ_X). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.78809897855536

Determine the standard deviation of Y (σ_Y). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 1.5822768405055

Determine the covariance between X and Y ($\mu_{X,Y}$). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.1886

Determine the correlation coefficient between X and Y ($\rho_{X,Y}$). [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.15124410362804

Your answer is partially correct.

You have correctly answered 4 part(s) of this question.

Question 5

Correct

Mark 5.00 out of 5.00

Let X denote the number of times a certain numerical control machine will malfunction: 1, 2, or 3 times on any given day. Let Y denote the number of times a technician is called on an emergency call. Their joint probability distribution is given as

Joint Probability Mass Function of X and Y

	Y=1	Y=3	Y=5
X=1	0.07	0.08	0
X=2	0.09	0.05	0
X=3	0.02	0.09	0.6

Find the $P(X = 2)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.14

Find the $P(X = 2/Y = 3)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.22727272727273

Find the $F_{X,Y}(2, 3)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.29

Your answer is correct.

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Started on Wednesday, 25 November 2020, 9:30 AM
State Finished
Completed on Wednesday, 25 November 2020, 9:42 AM
Time taken 12 mins 1 sec
Grade 10.00 out of 10.00 (100%)

Question 1

Correct

Mark 10.00 out of 10.00

Let X and Y be two discrete random variables. Assume the table below represent the joint probability distribution between X and Y.

Joint Probability Mass Function of X and Y

	Y=1	Y=3	Y=5	Y=6
X=1	0.02	0.01	0.06	0.01
X=2	0.01	0.03	0.01	0.03
X=3	0.06	0.04	0.05	0.67

Find the $P(X \leq 2, Y \leq 5)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.14

Find the $P(X \leq 2, Y > 5)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.04

Find the $F_{X,Y}(3, 5)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.29

Find the $P(X = 2/Y = 3)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.375

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Started on Wednesday, 25 November 2020, 9:34 AM
State Finished
Completed on Wednesday, 25 November 2020, 9:45 AM
Time taken 10 mins 15 secs
Grade 10.00 out of 10.00 (100%)

Question 1

Correct

Mark 10.00 out of 10.00

Let X and Y be two discrete random variables. Assume the table below represent the joint probability distribution between X and Y.

Joint Probability Mass Function of X and Y

	Y=1	Y=3	Y=5	Y=6
X=1	0	0.02	0.07	0.07
X=2	0.04	0.01	0.01	0.01
X=3	0.02	0	0.07	0.68

Find the $P(X \leq 2, Y \leq 5)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.15

Find the $P(X \leq 2, Y > 5)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.08

Find the $F_{X,Y}(3, 5)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.24

Find the $P(X = 2/Y = 3)$. [The answer should be a number rounded to five decimal places, don't use symbols such as %]



One possible correct answer is: 0.33333333333333

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