

First Exam for IMSE 213

25 Sept 02

You may use your text and any "cheat sheets" you created.

You may not use your HW papers or the statistical functions on a calculator

You may not share texts, cheat sheets, or calculators.

Show your work, especially equations used, limits for summations and intergrations, etc.

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Pts.	No.	Problem statement
	1	What is the probability of drawing 3 aces in a row from a deck of 52 if you:
2	a)	Replace the card drawn and re-shuffle the deck each time comment: too easy
2	b)	Discard each card as it is drawn and re-shuffle the rest of the deck before drawing again
1	2	A card is drawn from a ordinary 52-card deck. What is the probability that it is a 3, given that it is a face card? _____ comment: too easy
3	3	Given the following data, compute the median: Data: -4 1 2 5 Median: _____ comment: too easy
2	4	What is the mean and the standard deviation of the data above? Mean: _____ comment: easy
3		Std. Dev.: _____
3	5	Given that $P(A) = 0.6$ and $P(B) = 0.2$ and A and B are independent.
3	a)	$P(A \cup B) =$ _____
3	b)	$P(A \cap B) =$ _____
6	6	Three computer brands are each sold with 5 different RAM configurations and 2 different harddisk sizes. How many choices do I have? comment: too easy
7	7	Find the number of ways 5 men can be assigned to drive 4 cars if no driver can drive more than one car. comment: easy

$$f(x,y) = \begin{cases} 4xy & , 0 \leq x \leq 1, 0 \leq y \leq 1 \\ = 0 & , \text{otherwise} \end{cases}$$

- 7 a) Find the marginal distribution of x
- 7 b) Find the marginal distribution y
- 7 c) Find the conditional probability distribution of x given y :
- 7 d) Find the expected value of x given y=2
- e) Determine whether f(x,y) is a possible distribution
- f) Are X and Y independent?

11 Given the joint probability distribution below:

$$f(x) \mid 0.28 \quad 0.22 \quad 0.33 \quad 0.17 \quad 0.11$$

20 4 For the continuous random variable x , where: $f(x) = \begin{cases} (2 - 3x^2), & 0 < x < 1 \\ 0 & \text{all else} \end{cases}$

a) Find the mean of the continuous random variable x

b) Find the variance of the continuous random variable x [Set up, only]

c) Find the probability that $0.1 < x < 0.2$:

0.39

5 Given the following, find the mean of Z and the variance of Z