HOMEWORK 9 - MATH 111

DUE DATE: Monday, April 18
INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. For the following experiment, write **formally** down an equally likely sample space and then write **formally** down the indicated events: From a group of 5 people, Alisa, Bob, Christy, David and Emma, 2 are to be selected to attend a conference.
   (a) Christy is selected.
   (b) Alisa and Bob are not both selected.
   (c) Both David and Emma are selected.
2. A fair die is rolled twice. Write down a sample space. Then find the probabilities of the following events:
   (a) The first die shows a 5.
   (b) The sum of the numbers showing is 7.
   (c) The sum of the numbers showing is 1.
3. The numbers 1,2,3,4 and 5 are written on slips of paper and two slips are drawn at random one at a time without replacement. Find the following probabilities:
   (a) The sum of the numbers drawn is 9.
   (b) The sum of the numbers drawn is 5 or less.
   (c) The first number is 2 or the sum is 6.
4. In the "Ask Marilyn" column of *Parade* magazine, a reader wrote about the following game: You and I each roll a die. If your die is higher than mine, you win. Otherwise, I win. The reader thought that the probability that each player wins is 1/2. Is this correct? If not, what is the probability that each player wins?
5. In a refugee camp in southern Mexico, it was found that 90% of the refugees came to escape political oppression, 80% came to escape abject poverty, and 70% came to escape both. What is the probability that a refugee in the camp was not poor nor seeking political asylum?
6. Two fair dice are rolled. Find the probability of rolling the following:
   (a) A sum is 8, given the sum was greater than 7.
   (b) A sum of 6, given the roll was a double.
   (c) A double given that the sum was a 9.
7. If two cards are drawn without replacement from an ordinary deck, find the following probabilities:
   (a) The second is black given that the first is a spade.

(b) The second is an ace given that the first is not an ace.

(c) An ace and a 4 are drawn.

(d) Two hearts are drawn.

8. A medical experiment showed that the probability that a new medicine is effective is .75, the probability that a patient will have a certain side effect is .4 and the probability that both events occur is .3. Decide whether these events are dependent or independent.