HOMEWORK 9 - MATH 111 DUE DATE: Friday, December 5 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. Consider the experiment of rolling a die twice and then tossing a coin twice.
 - (a) Find the number of elements in the sample space of this experiment.
 - (b) Give the event "the sum of the dice is 8 and an even number of tails show in the coin flips". (This is one event!!)
- 2. Consider the experiment of drawing a card from an ordinary deck of 52 cards. Find the probability of drawing a red face card or a black ace.
- 3. Consider the experiment of successively drawing two balls out of an urn that contains 5 white, 6 red, 12 green and 7 black balls *without replacement*. What is the probability of the first ball being white and the second green? (This is one probability!!)
- 4. Consider a very small community college with 300 students. This fall semester 120 students are taking Business 101 and 100 are taking Math 111. 70 of these students are taking both Business 101 and Math 111. If one of the students is picked at random from the college population, what is the probability that he will be taking neither Business 101 nor Math 111?
- 5. Suppose that for two events E and F in a sample space S you know that P(E') = 0.4, P(F) = 0.3 and $P((E \cup F)') = 0.25$. Can you find $P((E \cap F)')$?
- 6. Consider the experiment of rolling two fair dice. What is the probability of the sum being even given that at least one of the dice showed a number at least 5?
- 7. A teacher has found that the probability that a student studies for a test is 0.6, the probability that a student gets a good grade on a test is 0.4 and the probability that both occur is 0.3. Are these events independent?
- 8. Consider the experiment of drawing successively two cards out of an ordinary deck of 52 cards without replacement. What is the probability of the second card being a black ace given that the first card was a red King?