QUIZ # 8

MATH 141 Spring 2012 - Dr. Oksana Shatalov

LAST NAME_____ FIRST NAME_____ Section #_____

Due Friday 06/22/2012 at the beginning of class.

- If turned in later than 10 minutes into class, 5 points off. No papers will be accepted after class.
- If you turn it in to my office (Blocker 629F), place it in my mailbox (Blocker 603) or e-mail a PDF-version to me, make sure you do it before 9:30am, Friday 06/22/2012.
- You MUST show ALL your work to get full credit. Just writing the answers down is not enough.
- Your work must be neat, easy to follow. BOX YOUR FINAL ANSWERS.
- You may use notes and textbook, but not the help of anything else.

On my honor, as an Aggie, I certify that the solution submitted by me is my own work. I had neither given nor received unauthorized aid on this work.

Signature: _____

1. Given A and B are independent, $P(A) = 0.4$ and $P(B) = 0.7$, find

   (a) $P(A \cap B) =$

   (b) $P(A \cup B) =$

   (c) $P(A^c) =$

   (d) $P(B^c) =$

   (e) $P(A^c \cap B) =$

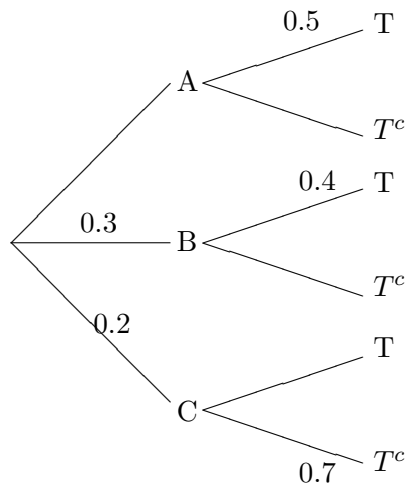   **(f)** $P(A^c \cup B) =$

   (g) $P(A|B) =$

   (h) $P(B|A) =$

2. Box #1 contains 5 blue and 8 red marbles. Box #2 contains 7 blue and 9 red marbles. A marble is chosen at random from Box #1. If it is blue, it is transferred to Box #2; otherwise, it is returned to Box #1. A marble is then chosen at random from Box #2.

(a) Draw a tree diagram (with probabilities on all branches) representing this information. Give the probabilities as fractions. Use B_1 to denote the event that a blue marble was drawn from Box #1, etc.

(b) What is the probability that a red marble was chosen from Box #1 given that a blue marble was chosen from Box #2? (First write the notation for the probability you are being asked to find, and then calculate it.)

3. At a certain conference, the delegates were from Austin (A), Bryan (B), and College Station (C). Some of these delegates gave a talk at this conference (T). This information is summarized in the tree diagram below.

```
                           0.5      T
                    A
                 /         \        T^c
                /
        0.3    /           0.4      T
        ------- B
       /            \               T^c
      /
     0.2                             T
       \
        \           C
         \              \            T^c
                    0.7
```

For questions below first write the notation for the probability you are being asked to find, and then calculate it.

(a) What is the probability that a randomly selected delegate at this conference gave a talk?

(b) What is the probability that a randomly selected delegate at this conference who did not give talk was from Bryan?

(c) What is the probability that a randomly selected delegate from Austin did not give a talk?

(d) Find $P(A \cup T)$.