Homework 5

Do the following problems. Make sure to show your explanation. The odd-numbered problems have the answer key in the back of the book.

Problem 35 of 2.2: Consider an experiment of rolling a fair die and flipping a fair coin. Use the concept of independence to compute the probability that you will get a 3 on the die and a tail on the coin.

Problem 40 of 2.2: Consider the square dart board consisting of 4 concentric squares with side lengths equal 1 in, 2 in, 3 in, 4 in, respectively. Imagine that two darts are thrown at the board, each one equally likely to land anywhere on the board. Assume also that the darts do not interfere with each other. What is the probability that at least one dart lands in the center square?

Problem 43 of 2.2: Suppose that you flip a fair coin 4 times. What is the probability of getting exactly 3 tails?

Problem 55 of 2.2: Suppose that you roll a fair die 5 times. What is the probability of getting at least three 1's?

Problem 9 of 2.3: A pair of fair dice are rolled. Compute the conditional probability of getting a sum of 6, given that the sum is even.

Problem 15 of 2.3: A single card is drawn from a deck of cards. Compute the conditional probability of getting a spade, given that the card is a queen.

Problem 37 of 2.3: In an upcoming congressional election, two democrats, Al and Bill, are seeking the nomination to run against the incumbent republican George. It is estimated that George has probability $\frac{1}{2}$ of beating Al in the election if Al is the democratic nominee but only $\frac{1}{3}$ of beating Bill. Given that Al has a $\frac{2}{3}$ probability of being the democratic nominee, what is the probability that George will be reelected?