Homework 3: Combinatorics and Probability (Part 1)

1. §1.5, #7

2. §1.7, #6, 8, 10

3. §1.8, #1, 4

4. Five differently-colored golf balls are randomly thrown into nine different buckets. Find the probability that

   (a) none of the golf balls lands in bucket 1.

   (b) no two golf balls land in the same bucket.

   (c) the red, white, and blue golf balls land in different buckets.

5. A deck of cards is shuffled. Find the probability that

   (a) the top five cards are all different denominations.

   (b) the bottom four cards are all the same denomination.

   (c) the top card is an ace.

   (d) the third card from the top is an ace.