Homework 2
Math 262

Write your solutions to the following problems and turn them in to the homework mailbox (RMS level 3, near the fireplace) by 4:00pm on Monday, September 16.

Book Problems

- Section 1.2 #17, 24 (pages 18–20)

- Section 1.3 #31, 32, 33, 34, 39 (pages 31–33)

Additional Problems

1. There are n socks (3 of which are red) in a drawer. What is the value of n such that when 2 of the socks are chosen, the probability that both are red is $\frac{1}{2}$? What assumptions are being made?

2. A poker hand consists of 5 cards dealt from a standard 52-card deck.* If it is assumed that all poker hands are equally likely, what is the probability of being dealt:

    (a) a flush? (A hand is said to be a flush if all 5 cards are of the same suit.)
    (b) one pair? (This occurs when the cards have ranks a, a, b, c, d, where $a, b, c,$ and d are all distinct.)
    (c) two pairs? (This occurs when the cards have ranks a, a, b, b, c, where $a, b,$ and c are all distinct.)
    (d) three of a kind? (This occurs when the cards have ranks a, a, a, b, c, where $a, b,$ and c are all distinct.)
    (e) four of a kind? (This occurs when the cards have ranks a, a, a, a, b, where a and b are distinct.)

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*A standard 52-card deck consists of 13 cards of each of the four *suits*: clubs (♣), diamonds (♢), hearts (♡), and spades (♠). Within each suit, each of the 13 cards has a different *rank*: ace, king, queen, jack, $10, 9, \ldots, 2$.