Homework 2
Math 262, fall 2022
due at classtime on September 27

Write your solutions to the following problems clearly and neatly. Make sure to explain your reasoning and provide mathematical details that support your answers. For a few tips on writing solutions, see this helpful guide for mathematical writing.

You may write or type your solutions electronically, or write them on paper and scan or photograph them. Upload a single file containing your solutions to the Homework 2 assignment on Moodle.

Book Problems

- Section 1.3 #34, 42, 49 (page 26–29)

- Section 1.4 #51, 54, 59, 60, 71 (pages 46–52)

- Section 1.5 #81, 88 (pages 47–48)

    Note: #88 has two possible answers

Additional Problems

1. Renata flies frequently and likes to upgrade her seat to first class. She has determined that if she checks in for her flight at least 6 hours early, the probability that she will get the upgrade is 0.8; otherwise the probability of getting the upgrade is 0.3. With her busy schedule, Renata checks in at least 6 hours early only 40% of the time. What is the probability that Renata will get a first class upgrade on a randomly selected flight?

2. A poker hand consists of 5 cards dealt from a standard 52-card deck.[1] 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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[1]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, $10, 9, \ldots, 2$.