Class Exercise 6

Instructions

- Deadline: **Monday, March 23 (5:30 pm)**
- Please show all of your work on your submission. Notation counts. Poor notation will result in a loss of marks.
- Please leave your answers as exact values. If using decimals, please report your answer to four decimal places.
- You are encouraged to ask your instructor for help, and/or discuss ideas with your classmates. However, you must produce fully explained individual solutions.
- Under no circumstances may you simply copy solutions obtained online or from a classmate. In unclear cases, you may be asked to explain your solutions in a Teams meeting, and your work may be refused altogether.

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1. **Three events**

   Let A, B and C be three events such that A is mutually exclusive (disjoint) from both B and C, $P(A) = 0.2$, $P(B) = 0.4$, $P(C) = 0.6$ and $P(B \cap C) = 0.3$. Determine the following probabilities

   Hint: Use the above information to draw a Venn Diagram.

   (a) $P(A \cup B \cup C)$
   (b) $P(A' \cap B \cap C)$
   (c) $P(A' \cap B' \cap C')$
   (d) $P((A \cup B) \cap C)$
   (e) $P((A \cup B') \cap C')$
   (f) $P(C' \cup (A' \cap B'))$
   (g) $P(A \cup B' \cup C')$
   (h) $P((A \cup B) \cap (A' \cup C))$
   (i) $P((B \cup C) \cap A')$
   (j) $P((A \cap B') \cup (B \cap C'))$