

2/3 Homework

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Math 331

$$7 \quad P(A \cup B \cup C) = P(A \cup (B \cup C))$$

$$= P(A) + P(B \cup C) - P(A \cap (B \cup C))$$

$$= P(A) + P(B) + P(C) - P(B \cap C) - P((A \cap B) \cup (A \cap C))$$

$$= P(A) + P(B) + P(C) - P(B \cap C) - (P(A \cap B) + P(A \cap C) - P(A \cap B \cap C))$$

$$= P(A) + P(B) + P(C) - P(B \cap C) - P(A \cap B) + P(A \cap C) + P(A \cap B \cap C)$$

$$8 \quad P(2 \cup 9 \cup 13) = P(2) + P(9) + P(13) - P(2 \cap 9) - P(2 \cap 13) - P(9 \cap 13) + P(2 \cap 9 \cap 13)$$

$$P(2) = 5000$$

$$P(9) = \frac{9999}{9} = 1111$$

$$P(13) = 769$$

$$P(18) = 555$$

$$P(26) = 384$$

$$P(117) = 85$$

$$P(234) = 42$$

$$5000 + 1111 + 769 - 555 - 384 - 85 + 42$$

$$\frac{5898}{10000}$$

$$\frac{2949}{5000}$$