

## 例題 32

別解：ベン図を利用して解く

(1)

$$\begin{aligned}P(A \cup B \cup C) &= P(A) + P(B) + P(C) - \{P(A \cap B) + P(B \cap C) + P(C \cap A)\} + P(A \cap B \cap C) \\&= \frac{2}{5} + \frac{3}{7} + \frac{1}{2} - \left( \frac{2}{5} \cdot \frac{3}{7} + \frac{3}{7} \cdot \frac{1}{2} + \frac{1}{2} \cdot \frac{2}{5} \right) + \frac{2}{5} \cdot \frac{3}{7} \cdot \frac{1}{2} \\&= \frac{29}{35}\end{aligned}$$

(2)

$$\begin{aligned}P(A \cup B \cup C) - \{P(A \cap B) + P(B \cap C) + P(C \cap A) - 2P(A \cap B \cap C)\} \\&= \frac{29}{35} - \left( \frac{2}{5} \cdot \frac{3}{7} + \frac{3}{7} \cdot \frac{1}{2} + \frac{1}{2} \cdot \frac{2}{5} - 2 \cdot \frac{2}{5} \cdot \frac{3}{7} \cdot \frac{1}{2} \right) \\&= \frac{29}{70}\end{aligned}$$