

2015年A日程第5問



5 全体集合 U の部分集合 A, B について, $n(U) = 70$, $n(A) = 35$, $n(B) = 20$, $n(A \cap B) = 12$ であるとき, 次の集合の要素の個数を求めよ.

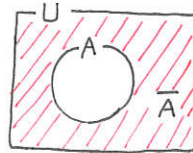
$$(1) n(\bar{A}) = \boxed{} \quad 35$$

$$(2) n(\overline{A \cap B}) = \boxed{} \quad 58$$

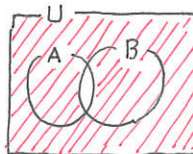
$$(3) n(A \cup B) = \boxed{} \quad 43$$

$$(4) n(\bar{A} \cap \bar{B}) = \boxed{} \quad 27$$

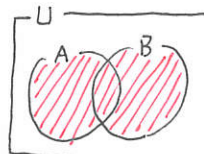
$$\begin{aligned} (1) n(\bar{A}) &= n(U) - n(A) = \\ &= 70 - 35 \\ &= \underline{35} \text{ ,,} \end{aligned}$$



$$\begin{aligned} (2) n(\overline{A \cap B}) &= n(U) - n(A \cap B) \\ &= 70 - 12 \\ &= \underline{58} \text{ ,,} \end{aligned}$$



$$\begin{aligned} (3) n(A \cup B) &= n(A) + n(B) - n(A \cap B) \\ &= 35 + 20 - 12 \\ &= \underline{43} \text{ ,,} \end{aligned}$$



$$\begin{aligned} (4) n(\bar{A} \cap \bar{B}) &= n(\overline{A \cup B}) \quad (\because \text{ド・モルガンの法則}) \\ &= n(U) - n(A \cup B) \\ &= 70 - 43 \quad (\because (3) \text{より}) \\ &= \underline{27} \text{ ,,} \end{aligned}$$