

$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C) \quad \text{by distributive law.} \quad (1)$$

$$= (B \cup A) \cap (C \cup A) \quad \text{by commutative law.} \quad (2)$$

$$= (B \cap C) \cup A \quad \text{by distributive law.} \quad (3)$$

$$(4)$$