Solution to Problem 22

Task. If the expert's degrees of confidence in two statements A and B are 0.7 and 0.9, and we use min as an "and"-operation and max as an "or"-operation, what degree of confidence shall we assign to $A \,\&\, B$? To $A \vee B$? If a statement C has degree of confidence 0.8, what is our degree of belief in $(A \,\&\, B) \vee C$?

Solution. For $A \,\&\, B$, we get $d(A \,\&\, B) = \min(0.7, 0.9) = 0.7$. Similarly,

$$d(A \vee B) = \max(0.7, 0.9) = 0.9,$$

and

$$d((A \,\&\, B) \vee C) = \max(d(A \,\&\, B), d(C)) = \max(0.7, 0.8) = 0.8.$$