

Two-satisfiability

A special case of CNF is where each clause has at most two literals! That is, expression that are written in the form $(A_1 \vee B_1) \wedge (A_2 \vee B_2) \wedge \dots \wedge (A_k \vee B_k)$.

Which of the following CNF expressions are satisfiable?

1. $(x \vee y) \wedge (\neg x \vee \neg y)$
2. $(x \vee y) \wedge (\neg x \vee \neg y) \wedge x$
3. $(x \vee y) \wedge (\neg x \vee \neg y) \wedge x \wedge y$
4. $(x \vee y) \wedge (\neg x \vee \neg z) \wedge (\neg y \vee z) \wedge (\neg x \vee z)$
5. $(\neg x \vee y) \wedge (\neg y \vee z) \wedge (\neg z \vee x) \wedge (x \vee z)$