Definition

If problem A can be solved in polynomial time using a hypothetical polynomial time algorithm for problem B, then problem A is *polynomial-time Turing reducible* to problem B. (Usually we just say A Turing reduces to B.) In symbols, we write

$$A \propto_T B.$$

Definition

A problem B is called *NP-hard* if, for some *NP*-complete problem A,

$$A \propto_T B.$$

All problems

NP-hard

NP-complete

If $P = NP$, no problems are in here. If $P \neq NP$, all problems in P are in here.