

This problem can be decided in polynomial time. It helps to view the *QSAT* instance as a *CSAT* instance instead: Player 1 controls the set  $A$  of odd-indexed variables while Player 2 controls the set  $B$  of even-indexed variables. Our question then becomes: can Player 1 force a win?

We claim that Player 1 can force a win if and only if each clause  $C_i$  contains a variable from  $A$ . If this is the case, Player 1 can win by setting all variables in  $A$  to 1. If this is not the case, then some clause  $C_i$  has no variable from  $A$ . Player 2 can then win by setting all variables in  $B$  to 0: in particular, this will cause the clause  $C_i$  to evaluate to 0.

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<sup>1</sup>ex63.946.695