

Because of Spring Break, only one late day may be used for this assignment. If received after March 7, no credit will be given.

1. Define $USAT = \{\langle \phi \rangle \mid \text{Boolean formula } \phi \text{ has exactly one satisfying assignment}\}$.

Does the following non-deterministic polynomial-time machine N decide $USAT$? Explain.

$N =$ "On input $\langle \phi \rangle$:

1. Nondeterministically select an assignment x .
 2. *Reject* if x does not satisfy ϕ .
 3. Else nondeterministically select an assignment $y \neq x$.
 4. *Reject* if y satisfies ϕ , and *accept* otherwise."
2. Problem 7.21.
 3. Problem 7.24.
 4. Problem 7.25.
 5. Problem 7.32.