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Modern Complexity Theory

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Assignment 4

Problem 11 (2 points)**:**
Prove (8) of Proposition 4.1 and (3) of Proposition 4.3.

Problem 12 (4 points)**:**
Prove via reduction with the help of the language in Problem 7 (or its complement) that the languages

$$H = \{\langle M\rangle : \ M \text{ started with an empty input accepts}\}$$

and

$$S = \{\langle M\rangle : \ M \text{ accepts all inputs}\}$$

are not recursive.

Problem 13 (4 points)**:**
Complete the proof of the NP-completeness of SAT by deriving logical expressions for "$C_t \rightarrow C_{t+1}$" and "$C_t = C_{t+1}$".