Tutorial Sheet 5

1. Is there a recursively enumerable language L which is not reducible to its complement? Justify your answer.

2. Show that for any recursively enumerable language L, there is a polynomial-time reduction from L to the Halting Problem.

3. Prove that every language in NP can be recognized by a *deterministic* Turing machine in exponential time.

4. Show that if $NP = P$, then every language in P except the empty language and the language of all strings is NP-complete.

5. Show that the language of non-primes in binary representation is in NP.

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