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Modern Complexity Theory

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Assignment 2

Problem 4 (2 points)**:**
Show that for every set A it holds that $|A| < |2^A|$.

Problem 5 (2 points)**:**
Prove that the set of all sets cannot exist.

Problem 6 (2 points)**:**
Give a proof that the recursively enumerable languages are not closed under basic set operations.

Problem 7 (4 points)**:**
Show that the language

$$L = \{\langle M \rangle w : \ M \text{ started with } w \text{ does not accept}\}$$

is not recursive. (Hint: use the fact that L_d is not recursive.)