HOMEWORK 2

Problems assigned up to and including **Friday, 09/05**. The solutions are due on **Friday, 09/12**.

ASSIGNED WEDNESDAY, 09/03.
Section 1.3: 8, 12.
Problem A: Denote by $\mathcal{S}$ the set of all subsets $A \subset \mathbb{N}$ for which both A and $\mathbb{N} \backslash A$ are **infinite** (not uncountable, as I originally – and mistakenly – wrote). Prove that $\mathcal{S}$ is uncountable.
Problem B: Suppose A is an infinite set, and B is a countable set. Prove that the sets A and $A \cup B$ are equipollent.
Problem C (bonus): For a set A, denote by $A^{\mathbb{N}}$ the set of all infinite sequences of elements of A. Show that $\mathbb{R}^{\mathbb{N}}$ (the set of all sequences of real numbers) is equipollent with $\mathbb{R}$. You can use the fact that $\mathbb{R}$ is equipollent with the power set of $\mathbb{N}$, and identify the latter with the set of all $0-1$ sequences.

ASSIGNED FRIDAY, 09/05.
Section 2.1: 1(b), 2(b).

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The solutions.