Prove that co finite set over N is countable [duplicate]

This question already has an answer here:
Show that the set of all finite subsets of $\mathbb{N}$ is countable. *7 answers*

I have

$$L = \{A \in \mathcal{P}(\mathbb{N}) | A \text{ co finite over } \mathbb{N}\}$$

How can I prove that L is countable?

Thanks

(elementary-set-theory)

edited Apr 28 '14 at 5:35

Asaf Karagila
276k ● 31 ■ 376 ▲ 697

asked Apr 28 '14 at 5:33

user2102697
37 ▲ 2

marked as duplicate by Asaf Karagila, T. Bongers, naslundx, John Ma, Claude Leibovici Apr 28 '14 at 7:16

This question has been asked before and already has an answer. If those answers do not fully address your question, please ask a new question.

I've edited your post to format the math in it. Please verify that it says what you intended. – user61527 Apr 28 '14 at 5:35

1 Note there is a canonical bijection between the set of finite subsets, and the set of cofinite subsets. – Asaf Karagila Apr 28 '14 at 5:36

1 Answer

Hint: Find a bijection

$$\{A \in \mathcal{P}(\mathbb{N}) : A \text{ cofinite}\} \longleftrightarrow \{A \in \mathcal{P}(\mathbb{N}) : A \text{ finite}\}$$

and use familiar facts about countable sets to deduce that the latter, hence the former, is countable.

answered Apr 28 '14 at 5:37

Clive Newstead
44.5k ● 4 ■ 68 ▲ 125