

# Finishing the proof

## Now we derive the contradiction!

- ▶ We assumed that the set  $\mathbb{P}(\mathbb{N})$  is countable, and that matrix  $M$  has a row for every element in the set.
- ▶ We defined the set  $Y \in \mathbb{P}(\mathbb{N})$  by  $j \in Y$  if and only if  $j \notin A_j$  for all  $j \in \mathbb{N}$ .
- ▶ Hence for all  $j \in \mathbb{N}$ ,  $Y \neq A_j$ .
- ▶ Therefore the matrix  $M$  cannot have a row for every element of  $\mathbb{P}(\mathbb{N})$ .
- ▶ Hence we derive a contradiction.