

① IDENTIFY WHICH OF THE FOLLOWING SETS HAVE CARDINALITY a) \aleph_0 b) \mathbb{C} .

1) $(1, \infty)$ 2) $\mathbb{N} - \{4\}$ 3) $(0, 5)$ 4) $\mathbb{N} \times \mathbb{N}$ 5) $\mathbb{N} \cup \{0\}$

6) $\mathbb{R} - \{1\}$ 7) $\mathbb{Q} - \mathbb{Z}$ 8) $\mathcal{P}(\mathbb{N})$ 9) $\mathbb{R} \times \mathbb{R}$ 10) $\mathcal{P}(\mathbb{R})$

② USE THE CANTOR - SCHRÖDER - BERNSTEIN TH TO SHOW THAT

A) $[0, 1] \approx (0, 1)$,

B) $\mathbb{R} \approx \mathbb{R} - \{0\}$.

③ DEFINE A BIJECTION $f: \mathbb{R} - \{0\} \rightarrow \mathbb{R}$.

④ GIVE AN ALTERNATE PROOF THAT $\mathbb{N} \approx \mathbb{Q}$ USING THE CANTOR - SCHRÖDER - BERNSTEIN TH.

⑤ SHOW THAT

a) IF $|A| \leq |B|$ AND $|B| < |C|$, THEN $|A| < |C|$.

b) IF $|A| < |B|$ AND $|B| < |C|$, THEN $|A| < |C|$.

c) IF $|A| \leq |B|$ AND $|B| \leq |C|$ AND $|A| = |C|$, THEN $|A| = |B|$.