

Computability Assignment

Year 2012/13 - Number 4

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Please do not submit a file containing only the answers; edit this file, instead, filling the answer sections.

1 Question

Let A, B be sets and suppose that $A \leftrightarrow B$ (i.e. there exists a bijection $f \in (A \rightarrow B)$). Show that for all sets C , $(C \rightarrow (A \times A)) \leftrightarrow (C \rightarrow (A \times B))$.

1.1 Answer

Write your answer here.

2 Question

1. Does a surjective function $f \in (\mathbb{N} \rightarrow (\mathbb{N} \rightarrow \{0, 1, 2, 3\}))$ exist?
2. Does an injective function $f \in (\mathcal{P}(\mathbb{N}) \rightsquigarrow \mathbb{N})$ exist?
3. Does an injective function $f \in (\mathcal{P}(\mathbb{N}) \rightarrow \mathbb{N})$ exist?

Justify your answers.

2.1 Answer

Write your answer here.

3 Question

Let A, B be nonempty sets and let $f \in (A \rightarrow B)$. Define a function $g \in (B \rightsquigarrow A)$ such that $\text{dom}(g) \neq \emptyset$ and for all $b \in \text{dom}(g)$, $(f \circ g)(b) = b$.

3.1 Answer

Write your answer here.