

Computability Assignment

Year 2013/14 - Number 1

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1 Question

Define a binary property $p(x, y)$ over natural numbers that satisfies both the requisites:

1. $\forall x \in \mathbb{N}. \exists y \in \mathbb{N}. p(x, y)$ and
2. *it is false that* $\forall y \in \mathbb{N}. \exists x \in \mathbb{N}. p(x, y)$

Provide a definition for p , and a proof for the above claims.

1.1 Answer

Write your answer here.

$$p(x, y) := (y = 3x)$$

1.1.1 Proof

1. For any x it is always possible to compute $y = 3x$, hence it always exists $y \in \mathbb{N}$.
2. For a given y it is not always possible to compute its $x = y/3$ in \mathbb{N} . e.g. for $y = 1$ there is no solution of x in \mathbb{N}