Exercício 8

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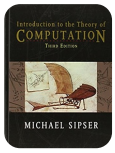

Introduction to the Theory of Computation

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Solução Certificado Solução fornecida há 2 anos

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To prove that set $T = \{(i, j, k) \mid i, j, k \in \mathbb{N}\}$ is countable, we need to find correspondence from $\mathbb{N}$ to T, i.e. provide a **list** of its elements.

First note that all elements in tuples from T are nonnegative. This implies that for each $s \in \mathbb{N}$ there are **finitely many** tuples (i, j, k) for which $i + j + k = s$ holds. Now we can list all elements of T by first arranging them in finite sets of elements

$$T_s = \{(i, j, k) \mid i, j, k, s \in \mathbb{N} \text{ and } i + j + k = s\},$$

and then listing elements in these sets lexicographically. First couple of elements in this list are:

$$(0, 0, 0),\ (0, 0, 1),\ (0, 1, 0),\ (1, 0, 0),\ (0, 0, 2),\ (0, 1, 1),\ (0, 2, 0),\ \ldots$$

Resultado 2 de 2

We provide a list of elements in T.

‹ Exercício 7

Avaliar esta solução

Exercício 9 ›