Untitled

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Question 1. Prove each of the following. I each case, you should create a bijection between the two sets.Briefly justify that your function are in fact bijections.

(a) $\{\heartsuit, \clubsuit, \spadesuit\} = \{\circ, \square, \triangle\}$

(b) $\mathbb{N} = \{oddnaturalnumbers\}$

(c) $A \times \{1\} = A$, where A is any set.

Question 2. Let F denote the seet of all functions from $\mathbb{N}$ to $\{0, 1\}$.

(a) Describe at least three functions in the set F.

(b) Prove that $\mid F \mid = \mid P(\mathbb{N}) \mid$.

Use multiplicatory rule to show $\mid F \mid = 2^{|\mathbb{N}|}$. *Note: a function with the same input and same out put is an equal function. so there's $2 \times 2 \times 2 \times ... \times n$ where n is the last natural number.

elements in $\mathbb{N} = \{1, 2, 3...n\}$
options for each element $= \{(0,1)_1, (0,1)_2, (0,1)_3...(0,1)_n\}$