

LOGIC & MATHEMATICS

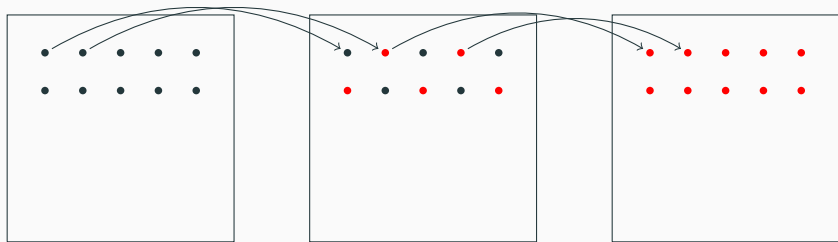
INFINITY SOLVED!

Johan, Meike, Reinier

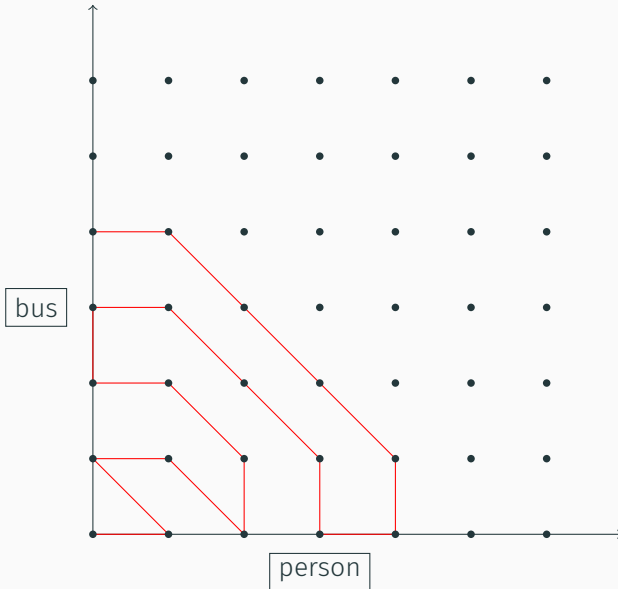
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MasterClass Logica
ILLC, Amsterdam

THREE BOXES



HILBERT'S HOTEL



We identified orders $<_1$ and $<_\infty$ on \mathbb{N} that correspond to the arrival of one extra guest and the arrival of a bus with infinitely many guests at Hilbert's hotel. Find subsets X_1 and X_∞ of \mathbb{Q} , the rational numbers, such that $(\mathbb{N}, <_1) \cong (X_1, <)$ and $(\mathbb{N}, <_2) \cong (X_\infty, <)$.

Find the appropriate orders on \mathbb{N} for the examples of the ferry of busses and the fleet of ferries from Hilbert's hotel and find corresponding subsets of \mathbb{Q} .

Can this be generalised to arbitrary wellorders defined on \mathbb{N} ?