Question 1 Notes

This is closely based on 93 P11 q11. It worked fairly well then. I don't think the prior set matters.

Solution Definitions

i) REFL, ANTI-SYMM + TRANSITIVE. (3)

ii) + "TRICHOTOMY" (1)

iii) ALL ~~[redacted]~~ ∞ ~~DESCENDING~~ CHAINS are ultimately constant. (2)

Examples

	over $\mathbb{N}$	over $\mathbb{Z}$
a) R_1		
i)	✓	✓
ii)	✓	✓
iii)	✓	×
minimal	0	—
maximal	—	—

(4)

Mathematics for Computation Theory

Question 1 solution ctd)

Examples

b) R_2.

	over $\mathbb{N}$	over $\mathbb{Z}$
i)	✓	× pre-order (2)
ii)	~~✓~~	×
iii)	✓ (1)	× (2)
minimal	1	— (2)
maximal	0	0

(5)

(1) under my definition — need to be flexible.

(2) $1 = -1 \cdot -1$, $-1 = -1 \cdot 1$

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c) R_3

i)	× (3)	× (3)
ii)	×	×
iii)	✓	✓
minimal	1	1, −1
maximal	0	0

(5)

(3) NOT transitive, hence not partial order.