HW14b

Tuesday, March 14, 2023 4:08 PM

6. Consider the following relations that are all relations on A (i.e. A ↔ A) where A = {a, b, c, d}. Indicate which properties each relation has by circling the property names the relation possesses.

a) for {(a,a), (a,b), (d,c)}
- o Reflexive ✗
- o [redacted]
- o Symmetric ✗
- o [redacted] ✓
- o Antisymmetric ✓
- o Transitive ✓

(a,a) (a,b) -> (a,b) ✓

b) for {(a,d), (d,a)}
- o Reflexive ✗
- o [redacted]
- o Symmetric ✓
- o [redacted] ✗
- o Antisymmetric ✗
- o Transitive ✗

(a,d) (d,a) -> (a,a) ✗
(d,a) (a,d) -> (d,d) ✗

c) for {(a,d), (a,b), (c,c)}
- o Reflexive ✗
- o [redacted]
- o Symmetric ✗
- o [redacted] ✓
- o Antisymmetric ✓
- o Transitive ✓

d) for {(a,b), (b,a), (d,d)}
- o Reflexive ✗
- o [redacted]
- o Symmetric ✓
- o [redacted] ✗
- o Antisymmetric ✗
- o Transitive ✗

(a,b) (b,a) -> (a,a) ✗
(b,a) (a,b) -> (b,b) ✗

e) for {}
- o Reflexive ✗
- o [redacted]
- o Symmetric ✓
- o [redacted] ✓
- o Antisymmetric ✓
- o Transitive ✓

f) for {(a,c), (c,a), (c,c), (a,a)}
- o Reflexive ✗
- o [redacted]
- o Symmetric ✓
- o [redacted] ✗
- o Antisymmetric ✗
- o Transitive ✓

(a,c) (c,a) -> (a,a) ✓
(c,a) (a,c) -> (c,c) ✓