```
RelationPredicates: trait
  % Tests for useful properties
  % of individual relations.
  assumes
    RelationBasics,
    RelationOps
  introduces
    antisymmetric, asymmetric, equivalence,
      functional, irreflexive, oneToOne, reflexive,
      symmetric, total, transitive: R → Bool
    into, onto: R, R → Bool
  asserts
    ∀ r, r1, r2: R
      antisymmetric(r) == (r ∩ (r⁻¹)) ⊆ I;
      asymmetric(r) == r ∩ (r⁻¹) = ⊥;
      equivalence(r) ==
        reflexive(r) ∧ symmetric(r) ∧ transitive(r);
      functional(r) == ((r⁻¹) ∘ r) ⊆ I;
      irreflexive(r) == r ∩ I = ⊥;
      oneToOne(r) == r ∘ (r⁻¹) = I;
      reflexive(r) == I ⊆ r;
      symmetric(r) == r = r⁻¹;
      total(r) == dom(r) = I;
      transitive(r) == r = r⁺;
      into(r1, r2) == range(r1) ⊆ set(r2);
      onto(r1, r2) == set(r2) ⊆ range(r1);
  implies converts
    antisymmetric, asymmetric, equivalence,
    functional, irreflexive, oneToOne, reflexive,
    symmetric, total, transitive, into, onto
```