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Exam 3 Part 2

**Question 1**

A relation S is defined from C to D. Also, the inverse relation S-1 exists according to the definition.

Prove (or disprove) mathematically that if S-1 is transitive then S is transitive.

**Proof:**

Let x, y, z be elements in the relation S such that x S y and y S z. Then by definition of inverse, y S-1 x and z S-1 y. If S-1 is transitive then, z S-1 x. If the definition of inverse is then applied to get the original relation S, then x Sz. Thus, showing that if S-1 is transitive then S is also transitive.