



planetmath.org

Math for the people, by the people.

reflexive relation

Canonical name	ReflexiveRelation
Date of creation	2013-03-22 12:15:36
Last modified on	2013-03-22 12:15:36
Owner	yark (2760)
Last modified by	yark (2760)
Numerical id	17
Author	yark (2760)
Entry type	Definition
Classification	msc 03E20
Related topic	Symmetric
Related topic	Transitive3
Related topic	Antisymmetric
Related topic	Irreflexive
Defines	reflexivity
Defines	reflexive

A relation \mathcal{R} on a set A is *reflexive* if and only if $a\mathcal{R}a$ for all $a \in A$.

For example, let $A = \{1, 2, 3\}$. Then $\{(1, 1), (2, 2), (3, 3), (1, 3), (3, 2)\}$ is a reflexive relation on A , because it contains (a, a) for all $a \in A$. However, $\{(1, 1), (2, 2), (2, 3), (3, 1)\}$ is not reflexive because it does not contain $(3, 3)$.

On a finite set with n elements there are 2^{n^2} relations, of which 2^{n^2-n} are reflexive.