

# A Review of Equivalence Relations

Do Homework 7.

## A Review of Equivalence Relations

A relation  $R$  is an equivalence relation if it is: reflexive, symmetric, and transitive.

Example:  $R$  = the reflexive, symmetric, transitive closure of:  
(Bob, Bill), (Bob, Butch), (Butch, Bud),  
(Jim, Joe), (Joe, John), (Joe, Jared),  
(Tim, Tom), (Tom, Tad)

An equivalence relation on a nonempty set  $A$  creates a partition of  $A$ . We write the elements of the partition as  $[a_1], [a_2], \dots$   
Example:

## Another Equivalence Relation

Example:  $R$  = the reflexive, symmetric, transitive closure of:  
(apple, pear), (pear, banana), (pear, peach),  
(peas, mushrooms), (peas, onions), (peas, zucchini)  
(bread, rice), (rice, potatoes), (rice, pasta)

Partition: