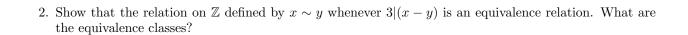
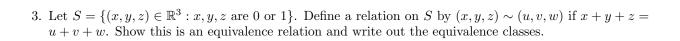
## MATH 120A Prep: Equivalence Relations

Facts to Know:
Equivalence Relation: An equivalence relation $\sim$ on a set $S$ satisfies three properties:
• Reflexive:
• Symmetric:
• Transitive:
Equivalence Class: The equivalence class of an element $x$ is
Connection to Partitions:
• Equivalence Relation to Partition:
• Partition to Equivalence Relation:

## Examples:

1. Define a relation on the set of people where  $A \sim B$  if the age of person A equals the age of person B. Show this is an equivalence relation.





4. Suppose we want an equivalence relation so that the classes are the lines of slope 5 in  $\mathbb{R}^2$ . How should we define the equivalence relation?