* 1. Suppose and are odd. That means and . So, . That means there is an integer n such that , namely . So Therefore
  2. Suppose x and y are even. That means and . That means that there is an integer such that and there is an integer such that . So . So there is an integer such that , namely . Which means . Therefore.

1. .
2. Let be an equivalence relation on a set and let .

⇐ Suppose . That means . Since is symmetric, . Therefore .

⇒ On the other hand, suppose . That means . Since is symmetric, . Therefore .

1. 1. is reflexive because since and are in and

is symmetric because since (1, 2), (2, 1), (5, 4), (4, 5) are in R.

is transitive because since it is vacuously true, because there is no case where .

* 1. R is not reflexive. For example and