① ⑤ The relation R on z defined by aRb if $2a + 5b \equiv 0 \pmod{7}$

④ ⓒ The relation R on z defined by aRb if $5a + 6b \equiv 0 \pmod{5}$

③
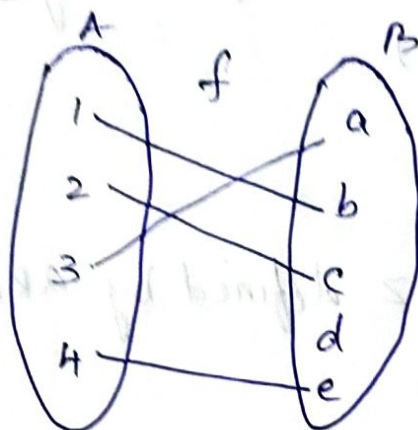


e) f is an injective function from A to B.

② Consider the set $S = R$

$$x \sim y \text{ iff } x^2 = y^2 .$$

**Reflexive:** Let $x, y \in R$

$$x R x \Rightarrow x^2 = x^2 \in R$$

∴ R is reflexive.

**Symmetric:** $x R y \Rightarrow y R x$ for $x, y \in R$

$$x R y \Rightarrow x^2 = y^2$$

$$y R x \Rightarrow y^2 = x^2 .$$

∴ R is symmetric

**Transitive:** $x R y$ and $y R z \Rightarrow x R z$.

$$x R y \text{ and } y R z \Rightarrow x R z .$$

$x \sim y$, $y \sim z$ Then $x \sim z$

∴ It is Transitive

∴ It is an equivalence relation