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Nepal Algebra Project(NAP)
Central Department of Mathematics
Tribhuvan University,Kirtipur, Kathmandu,Nepal
Fields and Galois Theory-Preliminary Homework
Course Instructor: Prof. Roger Wiegand and Prof. Sylvia Wiegand

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Questions

1. Let R be a commutative ring with $1 \neq 0$. Prove the following statements are equivalent.

   (a) $xy = xz, (x \neq 0) \implies y = z$

   (b) $x \neq 0, y \neq 0 \implies xy \neq 0$

   $\forall x, y, z \in R$

2. If p is a prime integer, show that $p | \binom{n}{k}$ for $0 < l < p^n$

3. In an integral domain R, show that $a \sim b \iff \langle a \rangle = \langle b \rangle$