



MODERN ALGEBRA
SPRING 2019

ASSIGNMENT 6.3
DUE FEBRUARY 27

Exercise 1. Compute $[\mathbb{R}^\times : \mathbb{R}^+]$.

Exercise 2. Let G be a group of order pqr , where p, q and r are distinct primes. If $H, K < G$ satisfy $|H| = qp$ and $|K| = qr$, prove that $|H \cap K| = q$. [*Suggestion:* Begin by observing that K has more elements than H has (left) cosets.]

Exercise 3. Lang, II.4.4

Exercise 4. Lang, II.4.28

Exercise 5. Lang, II.4.29