

MATH 304 HOMEWORK 5

YOUR NAME GOES HERE

DUE OCTOBER 12, 2018

Let R and S be commutative rings with identity 1_R and 1_S , respectively. Define

$$T = R \oplus S = \{(r, s) : r \in R, s \in S\},$$

the *direct sum* of R and S . Define addition on T by $(r_1, s_1) + (r_2, s_2) := (r_1 + r_2, s_1 + s_2)$ and multiplication by $(r_1, s_1) \cdot (r_2, s_2) := (r_1 \cdot r_2, s_1 \cdot s_2)$.

Theorem I. As defined above, T is a commutative ring with identity.

Proof.

□

Theorem J. Let R be a finite commutative ring with no zero divisors and at least two elements. Then R has a multiplicative identity.

Proof.

□