

Problem Set #3

March 18, 2008

Book Problems

2, 13a, 13d, 13e, 28, 36, 37, 50, 51

Extra Problems

1. State, prove, and explain the two versions of the Chinese Remainder theorem used in the book.
2. If $f, g: R \rightarrow S$ are ring homomorphism, prove that

$$\ker(f - g) = \{r \mid (f - g)(r) = 0\}$$

is a ring. If R and S are unital, then show that this ring is also unital.

For extra credit, you can show that the ring you get is a pull-back in the category of [unital] rings.