

Number Theory II Fall 2010

Assignment 3.2 Due September 15

Exercise 1. Let *m* and *n* be relatively prime integers. Define X(a,b) = ab and $Y(d) = (\gcd(d,n), \gcd(d,n))$.

- **a.** If r, s and t are integers and gcd(r,s) = 1 prove that $gcd(rs,t) = gcd(r,t) \cdot gcd(s,t)$
- **b.** Prove that X and Y provide inverse bijections between then sets $\{a : a|m\} \times \{b : b|n\}$ and $\{d : d|mn\}$.

Exercise 2. Chapter 2, Exercise 3

Exercise 3. Chapter 2, Exercise 27