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