1. For any integer a, argue that $a + 3 > a + 2$.

2. Given integers a and b where $a \neq 1$, argue that $a \cdot b \neq 1$.

3. An integer a is divisible by an integer b means there is an integer z such that $a = b \cdot z$. Use any properties of the integers through page 14 to prove that for integers a, b, and c such that if a is divisible by b and b is divisible by c, then a is divisible by c.

4. Let Z denote the set of integers and let $S = Z \times (Z - \{0\})$. Argue that the relation F defined by:

$$F = \{((x, y), (u, v)) : xv = yu\}$$

   is an equivalence relation on S.

5. Consider the previous problem. List five members of the equivalence class $(7, 3)^F$.

6. Use the definition of addition of rational numbers to argue that $(3, 4)^F + (5, 6)^F = (19, 12)^F$.