Worksheet 7 Review 2

April 15, 2020

Question 1

a. In this case assume that $n \leq 1$.

We want to show $n \leq 1$.

Since the assumption tells us $n \leq 1$, we can conclude this is true.

b. **Pseudoproof:**

Let $a = d$ and $b = k$. Assume there exists $d \in \mathbb{N}$ where $(\exists k \in \mathbb{Z}, n = dk) \wedge d \neq 1 \wedge d \neq n$. Assume $n > 1$

We want to prove that $n \nmid a$, $n \nmid b$ and $n \mid ab$.

We will prove the statement in parts.

1. Part 1 (Proving $n \nmid a$).

   In this part, we need to show $n \nmid a$.

   1. Show $k \geq 0$.
   2. Show $n \geq d$.
   3. Show that for n to divide d, $n = d$.
   4. Conclude $n \nmid a$.

2. Part 2 (Proving $n \nmid b$)
3. Part 3 (Proving $n \mid ab$)

Question 2

Question 3