

### 11.0.1

$$n\mathbb{Z} = I$$

$$n\mathbb{Z} \subseteq I :$$

$$n * x \in n\mathbb{Z}$$

$$n \in I \Rightarrow n * x \in I$$

$$I \subseteq n\mathbb{Z} :$$

$$z \in I \Rightarrow \exists q, r. z = q * n + r$$

$$\text{Lemman von Bezout} :$$

$$(0 \leq r < n) \Rightarrow r = z - q * n$$

$$z, q * n \in I \Rightarrow r \in I$$

$$n = \min(\mathbb{N}) \Rightarrow r = 0 \wedge z \in \mathbb{Z}$$