Catalog of Definitions

Section 4: First Examples of Mathematical Proofs.

Definition (p. 40)**.** To say that x *is an even number* means that there exists an integer k such that $x = 2k$.

Definition (p. 40)**.** To say that x *is an odd number* means that there exists an integer k such that $x = 2k+1$.

Definition (p. 43)**.** To say that x *is a rational number* means that there exist integers m and n such that $n \neq 0$ and $x = m/n$.

Definition (p. 44)**.** To say that x *is an irrational number* means that x is a real number and x is not a rational number.

Definition (p. 45)**.** Let d and x be integers. To say that d *divides* x means that there exists an integer k such that $x = kd$.

Definition (p. 47)**.** To say that x *is a prime number* means that $x \in \mathbb{N}$ and $x \neq 1$ and for each $a \in \mathbb{N}$, for each $b \in \mathbb{N}$, if $x = ab$, then $a = 1$ or $b = 1$.

Definition (p. 51)**.** Let a, b, and m be integers. To say that a *is congruent to* b *modulo* m (written $a \equiv b \mod m$) means that m divides $b - a$.