

MATH 323 Section 2

QUIZ 2

January 28th, 2013

Your Name: _____

A real number x is rational if it can be written as the quotient of two integers.

a) State this precisely using quantifiers.

b) If a number that is not rational is called irrational, state precisely what it means to be irrational (using quantifiers).

Solution:

a) A real number x is rational if there exists $m, n \in \mathbb{Z}$ such that $x = m/n$. (Note, it would be better to specify that $n \neq 0$, but since we do not know what $m/0$ means, it is okay as is.) In symbols, this is: x is rational if $\exists m, n \in \mathbb{Z} \ni x = m/n$.

b) A number is irrational if for every $m, n \in \mathbb{Z}$, $x \neq m/n$.