

The symbol for the rational numbers is \mathbb{Q} while the symbol for the irrational numbers is $\mathbb{R} \setminus \mathbb{Q}$.
So you can express that x is an irrational number by $x \notin \mathbb{Q}$ or by $x \in \mathbb{R} \setminus \mathbb{Q}$.
Recall for any sets R and Q , the set R set minus Q is the set $R \setminus Q$ $\stackrel{\text{def.}}{=} \{x \in R: x \notin Q\}$.
Note the difference in direction in the backslash for set minus ($R \setminus Q$) and quotient of numbers ($1/2 = 0.5$).
A symbol for the positive real numbers is $\mathbb{R}^{>0}$ where $\mathbb{R}^{>0} = \{x \in \mathbb{R}: x > 0\}$.
You may use the fact we showed in class that if p is a prime then \sqrt{p} is irrational.

- . **Conjecture B.** For each positive real number x , if x is irrational then \sqrt{x} is irrational.
1. Symbolically write Conjecture B.
 2. State whether Conjecture B is true or false.
 3. If Conjecture B is true, then provide a proof of Conjecture B. If Conjecture B is false, then provide a counterexample that shows (and clearly explains why) Conjecture B is false.

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DELETE this whole sentence and THEN put your answer to ALL parts down here.