

Exercise. A variant of Exercise 2.4.3d.

§2.4

Consider the following statement.

$$(\exists x \in \mathbb{Q}) \left[\sqrt{2} < x < \sqrt{3} \right].$$

Note: The sentence “ $\sqrt{2} < x < \sqrt{3}$ ” is actually a conjunction. It means “ $\sqrt{2} < x$ ” and “ $x < \sqrt{3}$ ”.

a. Write the statement as an English sentence that does not use the symbols for quantifiers. (See Writing Guideline number 12 to see that it is fine to use symbols such as: +, =, <.)

delete this line and put your answer here

b. Write the negation of the statement in symbolic form (i.e., symbolically) in which the negation symbol (i.e., $\sim$) is not used.

delete this line and put your answer here

c. Write a useful negation of the statement in an English sentence that does not use the symbols for quantifiers.

delete this line and put your answer here