Before stating this ER, review the (linked) Symbolically Write Guidelines, which is also posted on the course homework page. It will answer many of the questions you might otherwise have.

►. Consider the following statement.

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

1. Write the statement in (O) as an English sentence. Hint. See (linked) Writing Guidelines to recall that your English sentence should not contain a quantified symbol (e.g., $\forall$, $\exists$) nor a logical connective symbol (e.g., $\wedge$, $\vee$, $\implies$, $\iff$, $\sim$, $\sim$); however, it is fine to use math symbols such as: $+$. $=$, $<$, $\leq$.
2. Symbolically write an equivalent formualation of the statement in (O) as to have a logical connective and 2 separate inequalities. Hint. Fill in the box with a logical connective: $\wedge$, $\vee$, $\implies$, $\iff$, $\sim$. Listening to myself carefully as you talk to myself tells me that $\sqrt{2} < x < \sqrt{3}$ can be expressed as: $\left(\sqrt{2} < x\right) \boxed{} \left(x < \sqrt{3}\right)$.
3. Symbolically write a useful negation of the statement in (O) that does not use the negation symbol (i.e. $\sim$ or $\neg$). Box your answer. Hint. DeMorgan. So do you want to start with (O) or your answer to part **2**?
4. Write a useful negation of the statement in (O) as an English sentence. Box your answer. ⟨Hint. Same hint as in part **1**.⟩

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