The purpose of this exercise is to test your understanding of basic ideas in predicate logic.

1. Consider the following predicates.

   (a) Consider the predicate: $x^2 > x$. Is the statement $(\forall x \in \mathbb{N})(x^2 > x)$ True or False. Justify your answer.

   (b) Consider the predicate: $x^2 = 2$. Is the statement $(\exists x \in \mathbb{Q})(x^2 = 2)$ True or False. Justify your answer.

   (c) Consider the predicate: $x^2 = 2$. Is the statement $(\exists x \in \mathbb{R})(x^2 = 2)$ True or False. Justify your answer.