Name _____ Transitions, Quiz 3

1) Write the following English sentence as a mathematical statement:

"For any real number x, there is an integer y that is larger than x."

$$\forall_{x \in \mathbb{R}} \exists_{y \in \mathbb{Z}} (y > x)$$

2) Sketch a proof of the same statement:

"For any real number x, there is an integer y that is larger than x."

Let x be an arbitrary real number. Choose $y = \lceil 1 + x \rceil$. Then $y \in \mathbb{Z}$ and $y = \lceil 1 + x \rceil \geq 1 + x > x$. Hence For any real number x, there is an integer y that is larger than x.