Worksheet 4 Review

March 22, 2020

Question 1

a. $\exists n \in \mathbb{N},\ n > 3 \wedge n^2 - 1.5n \geq 5$

b. The variable is existentially quantified

c. When introduced, the variable's value should be a **concrete natural number**.

d. Let $n = 5$.

Then $n > 3$, and

$$n^2 - 1.5n = 25 - 7.5 \tag{1}$$
$$= 17.5 \geq 5 \tag{2}$$

Then, it follows from above that the statement $\exists n \in \mathbb{N}, n > 3 \wedge n^2 - 1.5n \geq 5$ is true.

e. $\forall n \in \mathbb{N}, n > 3 \Rightarrow n^2 - 1.5n > 4$

$\Rightarrow$ should be used, because it allows the scoping of the set $\mathbb{N}$.

Question 2

Question 3