Worksheet 4 Solution

March 13, 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. Concrete natural number

d. Let n = 5.

Then,

$$(5)^2 - 1.5(5) \tag{1}$$

Then,

$$25 - 7.5 \tag{2}$$

Then,

$$17.5 \tag{3}$$

which is greater than 5. So, the statement is True

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

Here $\Rightarrow$ should be used because $n > 3$ is a given, and we are using it to show that the statement $n^2 - 1.5n > 4$ is True

f. The variable is universally quantified

g. In this proof the variable must be **arbitrary** natural number