January 27, 2019

Execise 1
Theorem: $(\exists m \in N)(\exists n \in N)(3m + 5n = 12)$
Proof:

$$3m + 5n = 12$$
$$m = 4 - \frac{5}{3}n$$

Since m has to be a natural number, the product of $\frac{5}{3}n$ has to be a natural number, too. Therefore n has to be a multiple of 3.

$$n = 3q, q \in N$$
$$m = 4 - 5q$$

Hence, there doesn´t exist a natural number q for which m is a natural number. Therefore the theorem is false