

Oct 27, 2010

METU, Fall 2010, Math 111, Section 1.

Quiz 1

1. Negate and simplify

$$\forall x P(x) \Rightarrow \exists y Q(y).$$

The final expression should involve only the symbols \forall , \wedge and \neg . Justify each step.

2. Are these statements true or false? Explain your answers briefly. The universe of discourse is \mathbb{N} .

- $\forall x (x \leq 10 \Rightarrow \exists a \exists b \exists c (a^2 + b^2 + c^2 = x))$.
- $\forall x \exists y ((x - 3)^2 = 5 \vee (y - 4)^2 = 25)$.