Negation of quantified statements Predicate logic

Prof Hans Georg Schaathun

Høgskolen i Ålesund

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Prof Hans Georg Schaathun

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Negation of quantified statements

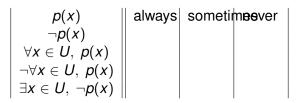
Theorem

The following two statements are equivalent:

$$\neg \forall x \in U, \ p(x) \tag{1}$$
$$\exists x \in U, \ \neg p(x) \tag{2}$$

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Corollary

Theorem

The following two statements are equivalent:

$$\neg \forall x \in U, \ p(x) \tag{3}$$
$$\exists x \in U, \ \neg p(x) \tag{4}$$

Corollary

The following two statements are equivalent:

$$\forall x \in U, \ \neg p(x)$$
(5)

$$\neg \exists x \in U, \ p(x)$$
(6)

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