

Math444-Homework3

Due date: February 6 Submission in pairs.

- (1) Negate the following statements.
 - (a) $\forall a \exists b : (a > c \Rightarrow b > c)$.
 - (b) $\exists b \forall a : (a > c \Rightarrow b > c)$.
 - (c) $\forall a, b, c : (a < b \text{ and } b < c \Rightarrow a < c)$.
 - (d) $\forall a \exists b \forall c \exists d : a < c \text{ or } b < d$.
 - (e) $\forall a \exists b \forall c \exists d : a \geq c \Rightarrow b < d$.
- (2) Prove or disprove the following statement for an ordered field
 - (a) $\forall a, b : ((\forall \varepsilon > 0 : a < b + \varepsilon) \Rightarrow a \leq b)$.
 - (b) $\forall a, b \exists c : (a < b \Rightarrow a < c < b)$.
 - (c) $\forall a, b : (a < c \Rightarrow \exists c : a < c < b)$.
 - (d) $\forall a, c : (a < c \Rightarrow \exists b : a < c < b)$.
 - (e) $\exists b \forall a, c : (a < c \Rightarrow a < c < b)$.
- (3) page 29 3.
- (4) page 30 no 6.
- (5) page 30 no 24.
- (6) page 34 no 14.