

Name: _____

Math 166 - Theory of Computability - Winter 1999

Quiz #1 — January 14

- Write out these sets explicitly (by listing all their elements).
 2^X denotes the powerset of X . Use (x, y) notation for ordered pairs.
“ \setminus ” is “set minus”.
 - $2^\emptyset =$
 - $2^{\{b, c\}} =$
 - $\{a, b\} \times \{c, d\} =$
 - $\{a, b\} \setminus (\{b, c\} \cap \{a, c\}) =$
 - $(\{a, b\} \setminus \{b, c\}) \cap \{a, c\} =$
- Indicate whether the statements are true or false:
 - ___ (a) For all a, b , (a, b) is equal to (b, a) only if $a = b$.
 - ___ (b) For all a, b , $\{a, b\} = \{b, a\}$ only if $a = b$.
 - ___ (c) For all sets A , A is empty if $\emptyset \in 2^A$.
- Describe the following sets in English: (\mathbb{N} is the set of non-negative integers.)
 - $\{n \in \mathbb{N} : n \geq k \text{ for some } k \text{ in } \mathbb{N}\}$
 - $\{n \in \mathbb{N} : n \geq k \text{ for all } k \text{ in } \mathbb{N}\}$