

# Math 2283 - Introduction to Logic

Quiz #5 - 2012.08.31

Name: \_\_\_\_\_

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1. Determine which of the following sentences are true, and which are false.

(a)  $\mathbf{A}_x \mathbf{E}_y (x \cdot y > 0)$

(b)  $\mathbf{A}_x \mathbf{E}_y (x \cdot y \geq 0)$

(c)  $\mathbf{A}_x \mathbf{A}_y (x \cdot y > 0)$

(d)  $\mathbf{E}_x \mathbf{A}_y (x \cdot y = 0)$

2. Define the mathematical relation  $<$  based on the relation  $>$ , the logical relation  $=$ , and logical connectives.