

ICS 6A Discrete Mathematics for Computer Science

Fall 2003

Quiz 1

October 15

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1. Fill in the following truth table.

r	p	$r \leftrightarrow p$	$p \rightarrow r$	$(r \leftrightarrow p) \rightarrow (p \rightarrow r)$
T	T			
T	F			
F	T			
F	F			

2. For each of the following statements, the universe of discourse is the set of all integers. Indicate whether each statement is true or false and briefly justify your answer.

(a) $\forall x \exists y \ x \cdot y = 0$.

(b) $\forall x \exists y \ x + y = 0$.

(c) $\exists y \forall x \ x \cdot y = 0$.

(d) $\exists y \forall x \ x + y = 0$.

3. Let $S_1 = \{a, b, c\}$. Let $S_2 = \{1, 2\}$.

(a) Write down $P(S_2)$, the power set of S_2 .

(b) Write down $S_1 \times S_2$, the Cartesian Product of S_1 and S_2 .