MATH 280 Discrete Mathematical Structures Assignment #5   Name _____

[5]   1. Let A, B, and C all be subsets of universal set U. Use **basic definitions** to prove

$$(A \cup B) \times C \ \subseteq \ (A \times C) \cup (B \times C)$$

Hint: Your proof necessarily will involve statements such as

$A \cup B = \{x \mid x \in A \ \lor \ x \in B\}$ (Definition of union)

and

$A \times C = \{(x,y) \mid x \in A \land y \in C\}$ (Definition of Cartesian product)

and in your proof you will invoke the distributive law from the basic logic laws in Chapter 3.

	Statement	**Reason**
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