

Quiz 6

MGF 3301 Intro. to Adv. Math

Student's Name: _____

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This is a 30 minute quiz. Discuss the problems in your group, and then write down your own answer. Third problem is on the back. After the quiz we will go over the answers on the blackboard.

Let A, B, C be sets. Prove the following or find a counter-example.

1. $B \setminus (B \setminus A) = A \cap B$.

2. $A \cup (B \cap C) = (A \cup B) \cap C$.

3. For each of the following subsets of $A \times A$ determine whether it is reflexive, symmetric, anti-symmetric, transitive.

(a) $A = \{a, b, c\}$, $R = \{(a, a), (a, b), (b, a), (a, c), (c, a)\}$.

(b) $A = \mathbb{R}$, R is the graph $y = x^2$.

(c) $A = \mathbb{Z}$, $R = \{(x, y) : \text{the greatest common divisor of } x \text{ and } y \text{ equals } 1\}$.