

Discrete Math
Quiz 2

Name: _____

You have 10 minutes to complete this quiz. If you have a question raise your hand and remain seated. In order to receive full credit your answer must be **complete**, **legible** and **correct**. Show your work, and give adequate explanations.

1. Let $A = \{-3, 2, 5\}$ and $B = \{-6, -1, 4\}$. Define a binary relation from A to B by

$$R = \{(x, y) \in A \times B \mid |x| < |y|\}.$$

Write R in roster notation. (That is, list all pairs of R between set braces.)

$$R = \{(-3, -6), (-3, 4), (2, -6), (2, 4), (5, -6)\}$$

2. Give an example of a ternary relation on the set of real numbers.

A ternary relation T on the set of real numbers is a subset $T \subseteq \mathbb{R}^3$. There are many possible subsets $T \subseteq \mathbb{R}^3$ that could serve as an answer to this question, like

- (1) $T = \emptyset$ (This is probably the simplest answer to this question.)
- (2) $T = \mathbb{R}^3$ (This is probably the second simplest answer to this question.)
- (3) $T = \{(x, y, z) \in \mathbb{R}^3 \mid x < y < z\}$
- (4) $T = \{(x, y, z) \in \mathbb{R}^3 \mid |x| = 1\}$
- (5) $T = \{(\sqrt{2}, \pi, e)\}$
- (6) ETC.

It suffices to give one example in order to answer this question.