

MATH 327
DISCRETE MATHEMATICS

QUIZ 1
April 4, 2016

Name (Last, First) Key

1. Fill in the blanks to rewrite the given statement.

Every nonzero real number has a reciprocal.

- a. All nonzero real numbers have a reciprocal
b. For all nonzero real numbers r , there is a reciprocal for r .
c. For all nonzero real numbers r , there is a real number s such that $s = \frac{1}{r}$.

2. Let $E = \{1, 2, 3\}$ and $F = \{2, 1, 0\}$ and define a relation T from E to F as follows:

For all $(x, y) \in E \times F$, $(x, y) \in T$ means that $\frac{x-y}{3}$ is an integer.

- a. Is $1 \in T$? Is $(2, 1) \in T$?
b. Write T as a set of ordered pairs.
c. Write the domain and co-domain of T .
d. Draw an arrow diagram for T .

a $\nabla (-1)$ since $-1 \notin F$
 $(2, 1) \notin T$ since $\frac{2-1}{3} \notin \mathbb{Z}$.

b $T = \{(1, 1), (2, 2), (3, 0)\}$

c $\text{Domain}(T) = \{1, 2, 3\}$

$\text{Co-domain}(T) = \{2, 1, 0\}$

