CLASS: Relation on Sets

- Due Mar 8 at 11:59pm
- Points 9
- Questions 9
- Time Limit None
- Allowed Attempts Unlimited

Instructions

This CLASS assignment is a introduction to Relations.

- Additional Examples of Relations;
- The Inverse of a Relation;
- Directed Graph of a Relation
- Reflexive, Symmetric, and Transitive Properties;
- Properties of Relations on Infinite Sets

You have multiple attempts in answering the question

Chapter 8 walk through the note (https://www.youtube.com/watch?v=hfkTgCerEbs)

Take the Quiz Again

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	4 minutes	9 out of 9
LATEST	Attempt 2	4 minutes	9 out of 9
	Attempt 1	130 minutes	7.4 out of 9

Correct answers are hidden.

Score for this attempt: 9 out of 9
Submitted Mar 8 at 10:12pm
This attempt took 4 minutes.

Question 1
1 / 1 pts

Relation and Cartesian Product (https://www.youtube.com/watch?v=9bTkzr-5iel)

Relations on Sets Note.pdf (https://deanza.instructure.com/courses/33250/files/10966564/?wrap=1) (https://deanza.instructure.com/courses/33250/files/10966564//download?download_frd=1)

Now answer the following question:

Define a relation L from $\mathbf{R}$ to $\mathbf{R}$ as follows: For all real numbers x and y,

$$x \, L \, y \Leftrightarrow x < y.$$

Which ones are in relation L?

- [ ] (1,1)
- [x] (1,2)
- [ ] (2,1)
- [x] (54,57)

Question 2
1 / 1 pts

Defining Relation on Power Set of a Set (https://www.youtube.com/watch?v=K_ubrRtN1cQ)

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Now answer the following question:

Which ones are in the relation E that I discussed in the lecture?

- [x] (4,0)
- [ ] (1,10)
- [ ] (10,1)
- [x] (-3,1)

Question 3
1 / 1 pts

Defining Relation on Power Set of a Set (https://www.youtube.com/watch?v=K_ubrRtN1cQ)

Relations on Sets Note.pdf (https://deanza.instructure.com/courses/33250/files/10966564/?wrap=1) (https://deanza.instructure.com/courses/33250/files/10966564//download?download_frd=1)

Now answer the following question:

Let $X = \{a, b, c\}$. Then $\mathscr{P}(X) = \{\emptyset, \{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}, \{a, b, c\}\}$. Define a relation **S** from $\mathscr{P}(X)$ to **Z** as follows: For all sets A and B in $\mathscr{P}(X)$ (i.e., for all subsets A and B of X),

$$A \mathbf{S} B \Leftrightarrow A \text{ has at least as many elements as } B.$$

a. Is $\{a, b\}$ **S** $\{b, c\}$? b. Is $\{a\}$ **S** $\emptyset$? c. Is $\{b, c\}$ **S** $\{a, b, c\}$? d. Is $\{c\}$ **S** $\{a\}$?

Which ones are true?

- [x] a
- [x] b
- [ ] c
- [x] d
- [ ] none

Question 4
1 / 1 pts

Inverse of a Relation (https://www.youtube.com/watch?v=A47K15JvWog)

Suppose T is a relation. Then T^{-1} is the same as $\frac{1}{T}$

- ( ) True
- (•) False

Question 5
1 / 1 pts

Inverse of a Relation (https://www.youtube.com/watch?v=A47K15JvWog)

Suppose R is a relation including (x,y). When we define the inverse of R, it means that we interchange x and y.

- (•) True
- ( ) False

Question 6
1 / 1 pts

Inverse of a Relation (https://www.youtube.com/watch?v=A47K15JvWog)

Suppose R is a relation including domain and range . When we define the inverse of R, it means that we interchange the domain and the range.

- True
- False

Question 7
1 / 1 pts

Inverse of a Relation (https://www.youtube.com/watch?v=A47K15JvWog)

In the lecture I discussed the inverse of relation R (Divisibility).

(8,4) is a member of the inverse of R.

- True
- False

Question 8
1 / 1 pts

Relation and Function (https://www.youtube.com/watch?v=irZ-EwwhGLE)

What is the relation that I discussed in the lecture?

- linear
- quadratic
- absolute value
- circle

Question 9
1 / 1 pts

Reflexive, Symmetric, and Transitive Relation (https://www.youtube.com/watch?v=CbVOtylcwjw)

Relations on Sets Note.pdf (https://deanza.instructure.com/courses/33250/files/10966564/?wrap=1) (https://deanza.instructure.com/courses/33250/files/10966564//download?download_frd=1)

Now answer the following question:

Let $A = \{0, 1, 2, 3\}$ and define relations R, S, and T on A as follows:

$$R = \{(0, 0), (0, 1), (0, 3), (1, 0), (1, 1), (2, 2), (3, 0), (3, 3)\},$$
$$S = \{(0, 0), (0, 2), (0, 3), (2, 3)\},$$
$$T = \{(0, 1), (2, 3)\}.$$

Select all that applies:

- [x] R is reflexive
- [x] R is symmetric
- [x] R is not transitive
- [ ] S is reflexive
- [ ] S is symmetric:
- [x] S is transitive
- [ ] T is reflexive
- [ ] T is symmetric
- [x] T is transitive

Quiz Score: 9 out of 9