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1. (1 point)

Midterm Practice Introduction

This problem set is for practice and is **not** worth anything.

You can attempt each problem as many times as you like and you can view the answers to a question by selecting the CorrectAnswers checkbox.

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2. (1 point)

Let $A = \{1, 8\}$ and $B = \{4, 7\}$.

Determine the following sets. Express your answers using **set notation**.

$A \times B =$ _____

$B \times A =$ _____

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3. (1 point)

Let $A = \{2, 6, 8\}$ and $B = \{\}$.

Determine the following sets. Express your answers using **set notation**.

$A \times B =$ _____

$B \times A =$ _____

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4. (1 point)

Suppose A and B are sets such that $A \times B = \{(3,4), (1,0), (3,0), (8,0), (8,4), (1,4)\}$.

Determine the following sets. Express your answers using **set notation**.

$A =$ _____

$B =$ _____

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5. (1 point)

Express the relation $\leq$ on the set $\{1, 2\}$ as a set of ordered pairs.

_____

Click here for help with set notation.

6. (1 point)

Determine the inverse of the relation $\{(9,-2),(-6,2),(4,-10),(6,10)\}$.

_____

Click here for help with set notation.

7. (1 point) Suppose the ordered pair $(3,-8)$ is an element of the relation R. Determine an ordered pair that is an element of the inverse relation R^{-1}.

_____

8. (1 point)

Consider the relation R from $\{1,2,3,4\}$ to $\{3,7,9,12\}$ given by $a\,R\,b \leftrightarrow |a^2-b| \leq 1$.

What is the domain of R ? _____

What is the range of R ? _____

Write your answers using **set notation**.

9. (1 point)

Consider the relation R from $\{1,2,3,4\}$ to $\{3,4,5,6\}$ given by $R=\{(1,3),(1,4),(1,6),(2,3),(2,6),(4,3)\}$.

What is the domain of R ? _____

What is the range of R ? _____

Write your answers using **set notation**.

10. (1 point)

Let $A=\{1,2,3,4\}$, let $B=\{2,4,5\}$, and let $C=\{4,8,9,11\}$. Consider the relation R from A to B given by $R=\{(1,5),(3,4),(4,5)\}$, and the relation S from B to C given by $b\,S\,c \leftrightarrow 2b<c$.

What is $S \circ R$? _____

Click here for help with set notation.

11. (1 point)

Let $A=\{1,2,3,4\}$, and let $B=\{3,7,8\}$. Consider the relation R from A to B given by $R=\{(1,7),(3,3),(3,8),(4,3),(4,7)\}$, and the relation S from B to A given by $b\,S\,a \leftrightarrow b=2a+1$.

What is $S \circ R$? _____

What is $R \circ S$? _____

Click here for help with set notation.