

Math 3345

Fundamentals of Higher Mathematics

Nathan Broaddus

Ohio State University

March 26, 2014

Course Info

HW21 Due Monday, March 31

- ▶ Section 10 Exercises 22c, 27b, 33a

Quiz 3 Friday, March 28 in class

Quiz 3 will cover pgs. 97-107

Warm-up Problems

Problem 1

Alt. Midterm 2 Problem 3

Problem 2

Alt. Midterm 2 Problem 4

Problem 3

Solution to Section 10 Exercise 3:

Write the sets

$$\{\{1\}, \{2\}, \{3\}, \dots\}$$

and

$$\{\{1, 2, 3, \dots\}, \{2, 4, 6, \dots\}, \{3, 6, 9, \dots\}, \dots\}$$

using set builder notation.

Warm-up Problems

Problem 4

Solution to Section 10 Exercise 5:

Let S be a set such that for each set A we have $S \subset A$. Show that $S = \emptyset$.

Problem 5

Solution to Section 10 Exercise 10:

Let A and B be sets. Show that $A \subset B$ if and only if $A \cap B = A$.

Functions

Definition 6 (Function)

Let A and B be sets. We say that f is a **function** from the set A to the set B if $f \subset A \times B$ and for all $a \in A$ there is a unique $b \in B$ such that $(a, b) \in f$.

Notation

$$f : A \rightarrow B$$

means “ f is a function from the set A to the set B ”.

Functions

Example 7 (Functions)

Let $A = \{1, 2\}$ and $B = \mathbf{N}$

1. Let

$$f = \{(1, 5), (2, 7)\}$$

Then f is a function from A to B .

2. Let

$$g = \{(1, 6)\}$$

Then g is **not** function from A to B but g **is a function** from $\{1\}$ to B .

3. Let

$$h = \{(1, 6), (2, 7), (1, 3)\}$$

Then h is **not** function.