Math 3345  
Fundamentals of Higher Mathematics

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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

\[
\{\{1\}, \{2\}, \{3\}, \cdots \}
\]

and

\[
\{\{1, 2, 3, \cdots \}, \{2, 4, 6, \cdots \}, \{3, 6, 9, \cdots \}, \cdots \}
\]

*using set builder notation.*

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.*
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 $f \subseteq A \times B$ 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 $B$”.

Example 7 (Functions)

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

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.