Homework assigned Monday, January 6:


Written homework (due Monday, January 13): Exercises 2, 3, and 4 on page 7.

Proof-writing homework (due Monday, January 13): Exercise 35 on page 34.

Homework assigned Wednesday, January 8:

Reading (due Friday, January 10): Read Chapter 2, pages 17-23. Answer the following question: Suppose $A$ is a set. Do our axioms guarantee that $\{\{b\} \mid b \in A\}$ is a set?

Written homework (due Monday, January 13): Exercise 5 on page 9. Also the following exercise:

A set $A$ is defined to be transitive if every element of $A$ is also a subset of $A$, that is,

$$\forall x (x \in A \implies x \subseteq A).$$

Prove that for every transitive set $A$, the power set $\mathcal{P}A$ is also transitive.

No new proof-writing homework.

Homework assigned Friday, January 10:

Reading (due Monday, January 12): Read Chapter 2, pages 23-27. Do the following exercise:

Suppose $\text{rank}(A) = 10$. What is $\text{rank}(\bigcup A)$? (The notion of rank was defined, somewhat informally, in Chapter 1.)
Written homework (due Monday, January 13): Exercises 18 and 19 on page 32.
No new proof-writing homework.

Week 2

Homework assigned Monday, January 13:

Reading (due Wednesday, January 15): Read Chapter 2, pages 27-34. Do exercise 29 on page 33.

Written homework (due Tuesday, January 21): Exercises 2, 6, and 8 on page 26.

Proof-writing homework (due Tuesday, January 21): Do the following exercise:

Recall that a set $A$ is transitive if every element of $A$ is also a subset of $A$. Also recall $\mathbb{N} = \{0, 1, 2, \ldots, n, \ldots\}$ is the set of natural numbers, which includes 0. Finally, note that by $\omega + 0$ we mean $\omega$.

Show that, for every $n \in \mathbb{N}$, the sets $V_n$ and $V_{\omega+n}$ defined on pages 7-8 are transitive. Assume there are no atoms, so $V_0 = \emptyset$.

Homework assigned Wednesday, January 15:

Reading (due Friday, January 17): Read Chapter 3, pages 35-42. Answer the following question: Using the idea Norbert Wiener used in his definition of ordered pair $\langle x, y \rangle = \{\{x\}, \emptyset\}, \{\{y\}\}$, how might you define the ordered triple $\langle x, y, z \rangle$?

Written homework (due Tuesday, January 21): Exercises 25 and 32 on pages 33-34.
No new proof-writing homework.

Homework assigned Friday, January 17:

Reading (due Tuesday, January 21): Read Chapter 3, pages 42-55. Do exercise 13 on page 53.
Written homework (due Tuesday, January 21): Exercises 2, 4, and 5 on pages 38-39.
No new proof-writing homework.

**Week 3**

Homework assigned Tuesday, January 21:

Reading (due Wednesday, January 22): Read Chapter 3, pages 55-62.

Written homework (due Monday, January 27): Exercises 14, 18, and 27 on page 53.

No new proof-writing homework.

Homework assigned Wednesday, January 15:

Reading (due Friday, January 24): Read Chapter 3, pages 62-66. Do exercise 43 on page 64.

Written homework (due Monday, January 27): Exercises 37, 40, and 41 on pages 61-62.

Proof-writing homework (due Wednesday, January 22): Do the following exercise.

Let \( Q \) be the equivalence relation on \( \mathbb{R} \times \mathbb{R} \) defined in exercise 41 on page 62. Show there is a function \( F : (\mathbb{R} \times \mathbb{R})/Q \to (\mathbb{R} \times \mathbb{R})/Q \) such that \( F([\langle a, b \rangle]_Q) = [\langle a^2 + b^2, 2ab \rangle]_Q \).

Homework assigned Friday, January 17:

Reading (due Monday, January 27): Read Chapter 4, pages 67-73.

Written homework (due Monday, January 27): Exercises 44 and 45 on page 64.

No new proof-writing homework.