THINGS TO KNOW FOR EXAM 3

1. General and Previous knowledge

(1) All material from the first two tests

2. Function Chapter

(1) Definition of a function.
(2) How to check that a function is well-defined.
(3) How to check a rule has the correct domain or codomain.
(4) Prove whether two functions are equal, or not.
(5) Understand characteristic functions.
(6) Know the definitions of injectivity, surjectivity, and bijectivity. Know how to do proofs with these concepts.
(7) Be able to find the image/range of simple functions.
(8) Definition of composition.
(9) Definition of inverse relation, and know when it is a function.
(10) Understand pasting together.
(11) Definition of restriction of functions.
(12) Images and preimages (inverse images) of sets, and elements.
(13) Know how to prove Theorems 26.12, 26.15, and 26.20.

3. Cardinality Chapter

(1) Definitions of $|A| = |B|$, $|A| \leq |B|$, and $|A| < |B|$.
(2) Know proof that $|\mathbb{N}| = |\mathbb{Z}|$.
(3) Definitions of countable, countably infinite, and uncountable.
(4) Know how to prove Theorems 29.1, 29.3, 29.5, 30.4, 31.5.
(5) Applications of the Schröder-Bernstein Theorem.