

Aids Allowed: Your *own notes* taken during lectures and office hours, the lecture *slides and recordings* (for all sections), and the *Course Notes* (textbook).

Submission Instructions

- Submit your work directly on **MarkUs**—even if you are late!
 - You may type your answers or hand-write them *legibly*, on paper or using a tablet and stylus.
 - You may write your answers directly on the question paper, or on another piece of paper/document.
 - You may submit your answers as a single document or as multiple documents.
 - You may name your file(s) any way you want (there is no “required file”).
 - You must submit your answers in PDF or as photos (JPEG/JPG/GIF/PNG/HEIC/HEIF).
Other formats (e.g., Word documents, L^AT_EX source files) **are NOT accepted**—you must **export** or **compile** documents to PDF, and **convert** images into a supported format.
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3. [6 marks] Disproofs.

Consider the following statement:

$$\forall x, y \in \mathbb{Z}, x \mid y \wedge y \mid x \Rightarrow x = y$$

- (a) [1 mark] Write the *negation* of this statement in predicate logic.
- (b) [5 marks] *Disprove* the original statement by proving its negation. Take the time to write your proof carefully: it will be marked on its *structure* as well as its *content*,

*Don't forget: there are **two more questions** in this test, in separate documents!*