Calculus 1 2022-2023.
Program
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- The abbreviation (P) near the number of a Theorem (or Proposition, Lemma, Corollary*) means that the student must know the proof of it. The numbers refers to the last version of the uploaded typed notes. The knowledge of all other proofs is optional.
- All definitions and the statements of all theorems (as well as propositions, lemmas, corollaries) listed below, together with fundamental examples, have to be known by the student.

Chapter 1: Basics.
All subjects

Chapter 2: Real numbers.
All subjects (except cardinality which was announced in the typed notes but not eventually treated). Theorem 2.1.1 (Irrationality of $\sqrt{2}$) (P)

Chapter 3: Complex numbers.
All subjects.

Chapter 4: Sequences.
All subjects except paragraph 4.7 (mathematical modelling).
Proposition 4.2.1 (Uniqueness of the limit) (P) (Only the proof of the case when the limit is finite. The proof of the case of an infinite limit is optional). Theorem 4.2.4 ("Two policemen theorem") (P).

Chapter 5: Limit.
All subjects. Proposition 5.6.4 (I.S.P.) (P)

Chapter 6: Continuity.
All subjects. Theorem 6.4.3 (Weierstrass) (P)

Chapter 7: Differential Calculus.
All subjects except Paragraph 7.10 and 7.13 Proposition 7.2.4 (Differentiability implies continuity) (P), Theorem 7.4.2 (Chain rule) (P), Theorem 7.5.2 (Fermat) (P), Theorem 7.5.4 (Rolle) (P), Theorem 7.5.5 (Lagrange) (P), Theorem 7.6.1 (Monotonicity and derivative's sign) (P)
Chapter 8: Integral Calculus.

All subjects. Proposition 8.2.5 (Integral mean) (P), Theorem 8.3.2 (The integral function $x \to F_c(x) := \int_c^x f(t)dt$ is a primitive of $f$) (P), Corollary 8.3.3 (Fundamental formula of integration) (P).

Chapter 9: Numerical series.

All subjects. Proposition 9.2.6 (If the series converges then the sequence tends to 0) (P), Theorem 9.3.2 (Comparison) (P), Theorem 9.4.4 (Absolute convergence implies convergence) (P).