

Alexander (Sasha) Teplyaev

MATH 340 FIRST MIDTERM EXAM QUESTIONS

Monday March 19 (2007), 1:00-1:50PM

- Section 1.1.3: Cauchy's inequality with proof.
- Section 2.1.2: Cauchy-Riemann equations with proof.
- Section 2.1.3: Theorem 1 with proof.
- Section 2.2.1: Definitions of \liminf and \limsup .
- Section 2.2.3: Definition and basic properties of uniform convergence.
- Section 2.2.4: Theorem 2 with proof. Formula for R with proof.
- Section 2.3: Definitions and basic properties of \exp , \sin , \cos and \log , the principle branch (see also section 3.2.2).
- Section 3.1: Basic knowledge of all the theorems, definitions and *emphasized* statements (without proofs).
- Section 4.1: Definitions of dz and $|dz|$ integrals. Theorems 1,2,3,4,5 with proofs.
- Section 4.2.1: Definition of $n(\gamma, a)$. Lemma 1, and *emphasized* items (i) and (ii) after it with proofs.
- Section 4.2.2: Theorem 6 with proof.
- Section 4.2.3: Lemma 3 (without proof). Morera's and Liouville's theorems, the FTA, Cauchy's estimate (all with proofs).
- Section 4.3.1: Theorems 7 and 8 with proofs.
- Section 4.3.2: Basic classification of isolated singularities with definitions of removable, pole, and essential singularities. Orders of poles and zeros. Singular part at a pole. Theorem 9 with proof.
- Section 4.3.3: Theorems 10 and 11, Corollaries 1 and 2, all with proofs.
- Section 4.3.4: Theorems 12 and 13 with proofs.
- All the homework problems up to section 4.3.2