

**REVIEW FOR MAT 342 MIDTERM 2
(CHAPTERS 3–4 IN THE TEXTBOOK)**

- Analytic and harmonic functions
- Elementary functions: the exponential, logarithmic, trigonometric and hyperbolic functions
- Contour integrals
- Upper bounds for moduli of contour integrals
- Antiderivatives
- Cauchy-Goursat theorem for simply connected and multiply connected domains
- Cauchy integral formula and its extension
- Consequences of the extension: Morera's theorem, Cauchy's inequality
- Liouville's theorem and the fundamental theorem of algebra
- Maximum modulus principle