

## Homework #7 • MATH 322 • More Theorems on Contour Integration

- submit your write-up into your Section's box by noon, Friday 27 October.
- please acknowledge collaborations & assistance from colleagues.

**A) Contour Integrals** (3 pages, 10pts) Problems #2 and #5 (page 163). For #5, use ideas related to the Cauchy Integral Formula and treat the cases of  $z_0$  interior to and exterior to  $\mathcal{C}$ . (Bonus: The final result oddly resembles a standard method of the real-variable calculus, can you identify it?)

**B) Cauchy Integral Formula for the 2<sup>nd</sup> Derivative** (3 pages, 10pts) Follow the proof as suggested by the lecture and problem #9 on page 164.

\* **Optional, but Recommended:** Return to the integral in #2a of part **A)** above. Show, by a careful construction of a *swiss cheese* argument, that the integral is zero for a contour  $\mathcal{C}$  that is the circular contour  $|z| = 8$  in the positive sense.