

# Complex Variables - HW 1

This first HW is worth 15 points and is due next Wednesday, September 5.

**The Problem:** Use the  $\varepsilon - \delta$  definition of limit to prove that

$$\lim_{z \rightarrow i} z^3 = -i.$$

## Requirements

- Your solution must be typed in L<sup>A</sup>T<sub>E</sub>X and the sketch should be electronically produced.
- Please don't discuss the problem in totality on our forum. There are a couple of sub-parts that you may discuss there.
  - Any polynomial factorization that you might use.
  - A choice of  $\delta$ .
  - Any picture, geometric argument, or application of the triangle inequality that you use.