## Homework 10 Due: Friday, November 2

- 1. [BC] 46.1ac, 46.2ac.
- 2. Let *C* be a simple, closed contour. Show that

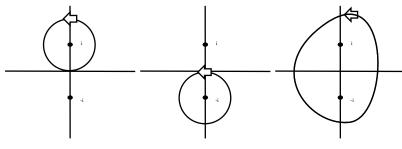
$$\int_C \frac{dz}{z} = 0$$

if and only if 0 is *not* in the interior of the contour *C*.

- 3. [BC] 46.7
- 4. Integrate the function

$$f(z) = \frac{1}{z^2 + 1}$$

over each of the following contours:



(HINT: What is  $\frac{1}{z+i} - \frac{1}{z-i}$ ?)

5. [BC] 48.5

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