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Homework 10  
Due: Friday, November 2

1. [BC] 46.1ac, 46.2ac.

2. Let  $C$  be a simple, closed contour. Show that

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

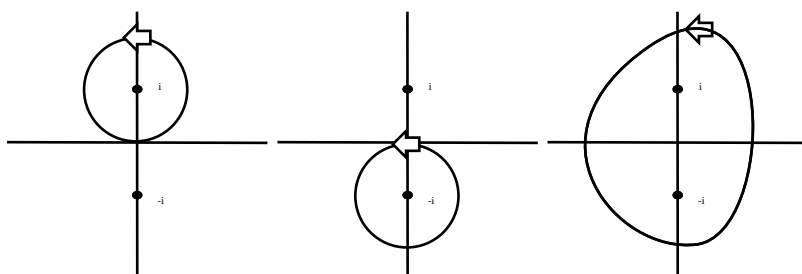
if and only if  $0$  is *not* in the interior of the contour  $C$ .

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