

Math 4450: Homework 8

Due October 28, 2009

Written problems

1. 4.4: 18, 19

Problems

1. 4.4: 10, 20
2. 4.5: 2, 4
3. Let

$$\Delta_1 = \{z \in \mathbb{C} \mid |z| < 2\}$$
$$\Delta_2 = \left\{z \in \mathbb{C} \mid |z - i| < \frac{1}{2}\right\},$$

and let $\partial\Delta_j$ be the boundary of Δ_j . Evaluate the following integrals.

- (a) $\int_{\partial\Delta_1} \frac{dz}{z^4 - 1}$,
- (b) $\int_{\partial\Delta_2} \frac{dz}{z^4 - 1}$,
- (c) $\int_{\partial\Delta_1} z^m(1 - z)^n dz$, for $m, n \in \mathbb{Z}$,
- (d) $\int_{\partial\Delta_2} |z|^2 dz$.