

MTH 317/617

Homework #7

Due Date: November 10, 2023

1 Problems for Everyone

1. Determine the domain of analyticity for the following functions and explain why

$$\int_{|z|=2} f(z) dz = 0.$$

(a) $f(z) = \frac{z}{z^2 + 25}$

(b) $f(z) = \frac{\cos(z)}{z^2 - 6z + 10}$

(c) $f(z) = \text{Log}(z + 3)$

(d) $f(z) = \sec\left(\frac{z}{2}\right).$

2. pg. 202, #13.

3. Evaluate

$$\int_{\Gamma} \frac{z}{(z+2)(z-1)} dz,$$

where Γ is the circle $|z| = 4$ traversed once in the clockwise direction.

4. pg. 202, #16.

5. pg. 203, #17.

6. pg. 203, #18.