

Math 295 - Fall 2020

Warm up 9.2

Due before class on Wednesday November 11

Please turn in this assignment on Gradescope.

Problem 1 : Let $z_0 \in \mathbb{C}$ and k be any integer (k can be positive or negative!). Show that

$$\int_{\gamma} (z - z_0)^k dz = \begin{cases} 2\pi i & \text{if } k = -1, \\ 0 & \text{otherwise,} \end{cases}$$

if γ parametrizes any simple, closed, piecewise smooth contour in \mathbb{C} and z_0 is inside γ .