

Homework #3: due in class Thursday April 6th.

1. Let $f(z) = \frac{\cos z}{(z - \pi/2)^3}$. Locate and classify all singular points of $f(z)$ and calculate the residue at each.
2. Using residue theory, show that

$$\int_0^{\infty} \frac{dx}{(x^2 + a^2)^2} = \frac{\pi}{4a^3}, \quad a > 0$$