

Applied Complex variable-Graduation Examination, 2022

1. Let $f(z) = |z|^2$. Find all points $z = x + iy$ where f is analytic.
2. Find all entire functions f such that $Re(f(z)) \leq 0$ and $f(0) = 0$.
3. Evaluate $\int_0^{\infty} \frac{1}{x^4+1} dx$.