MATH 2250, Fall 2010.
Homework assignment, Oct. 13, 2010

1. Let Ω be a bounded region with C^1 boundary $\gamma = \partial\Omega$, and let f be a proper rational function with no poles on the boundary γ. Then using partial fractions one can decompose $f = f_+ + f_-$, where f_- and f_+ are proper rational functions with poles in Ω and in the exterior of Ω respectively.

Express $f_+(z) - f_-(z)$ on γ as an integral.

2. If γ is a simple C^1 closed curve and $f \in C^1(\gamma)$, show that for any $z_0 \in \gamma$ the function f can be extended to a C^1 function in some neighborhood (in $\mathbb{C}$) of z_0.