Same instruction as Mission 1. Enjoy !

Problem 61 Saff and Snider §4.3#1 (integration of many interesting functions along funny contour)

Problem 62 Saff and Snider §4.4#10 (integration of nice functions on a circle)

Problem 63 Saff and Snider §4.4#17 (partial fractions integration)

Problem 64 Saff and Snider §4.5#3 (integration based on Cauchy's $\int$-formula)

Problem 65 Saff and Snider §4.5#16 (setting up single-valued branch of $log(f(z))$)

Problem 66 Saff and Snider §5.2#3 (using a power series to form new series)

Problem 67 Saff and Snider §5.2#8 (proof via Taylor series argument)

Problem 68 Saff and Snider §5.2#11 (first few non-trivial terms via multiplication)

Problem 69 Saff and Snider §5.3#1 (convergence on boundary, nice examples)

Problem 70 Saff and Snider §5.3#3 (ratio test for finding ROC for power series)

Problem 71 Saff and Snider §5.3#14 (definition of sine via differential equation)

Problem 72 Saff and Snider §5.4#12 (Riemann zeta function analytic for $Re(z) > 1$)

Problem 73 Find the power series expansion of $f(z) = Log(z)$ about $z_o = i - 2$ and show the R.O.C. is $R = \sqrt{5}$. We know $Log(z)$ is discontinuous at $z = -2$, is the power series centered at z_o discontinuous at $z = -2$? Discuss the relation of the power series centered at z_o with the given function.

Problem 74 Let $\alpha \in \mathbb{C}$ and let $f(z) = (1 + z)^\alpha$ denote the principle branch of the α-power function. Derive the Taylor series for $f(z)$ centered at $z_o = 0$ and calculate the radius of convergence for your series.

Problem 75 Show that if $f(z) = \frac{A_k}{z^k} + \frac{A_{k-1}}{z^{k-1}} + \cdots + \frac{A_1}{z} + g(z)$ where $g(z)$ is holomorphic on $|z| \leq 1$ then $\oint_{|z|=1} f(z)dz = 2\pi i A_1$.
you feel something inside you start to stir. An instinct begins to arise...