

SNU MAE
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Engineering Math 2 Quiz 2

1. Is the following function analytic?

$$f(z) = \ln|z| + i\text{Arg}z$$

2. Evaluate (showing the details and using partial fractions if necessary).

$$\oint_C \frac{dz}{z^2 + 1},$$

$$C : \text{(a) } |z + i| = 1, \text{ (b) } |z - i| = 1$$

3. Integrate around C.

$$\frac{e^{z/2}}{(z-a)^4}, \text{ C the circle } |z - 2 - i| = 3, \text{ counterclockwise}$$

4. Find the center and the radius of convergence of the following power series.

$$\sum_{n=0}^{\infty} \frac{n^4}{2^n} z^{2n}$$