

**SRM Institute of Science and Technology  
Ramapuram Campus.**

**Department of Mathematics**

**Assignment – 5**

Sub. Code: 18MAB102T

Sub. Title: Advanced Calculus and Complex Analysis

Year : I Year B. Tech. (Common to all Branches)

Date of Submission : on or before 26.07.2021

Date: 23.07.2021

Max. Marks: 10

Semester : II

**Unit 5**

**Complex Integration**

1. Evaluate  $\int_C \frac{1}{2z-3} dz$  where C is  $|z| = 1$  by Cauchy's integral formula.
2. Evaluate  $\int_C \frac{e^{-z}}{z+1} dz$  where C is  $|z| = 1.5$  by Cauchy's integral formula.
3. Evaluate  $\int_C \frac{1}{(z-1)^2} dz$  where C is  $|z| = 2$  by Cauchy's integral formula for derivatives.
4. Calculate the residue at  $z = i$  for the function  $f(z) = \frac{1}{z^2 + 1}$ .
5. Expand the function  $f(z) = \sin z$  as Taylor's series about  $z = \frac{\pi}{4}$ .

\* \* \* \* \*