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|  | | | **SRM Institute of Science and Technology**  **Kattankulathur** | |  |
| **DEPARTMENT OF MEATHEMATICS** | |
| **18MAB102T ADVANCED CALCULUS & COMPLEX ANALYSIS** | |
| **UNIT -5: Taylor and Laurent’s Series**  **Tutorial Sheet -2** | |
| **Sl.No.** | | | **Questions** | | **Answer** |
| **Part – A** | | | | | |
| **1** | **Obtain the expansion of f(z)=in Taylor series in power of (z-1) and give the region of validity and Laurent series for |z-1|>1** | | | i)  ii) | |
| **2** | **Expand about z=π** | | |  | |
| **3** | **Represent the function in Laurent series**   1. **within |z|=2,** 2. **In the annular region between |z|=2 and |z|=3**   **iii) Exterior to |z|=3** | | | i)  ii)  iii) | |
| **4** | **Expand in Laurent series about z=0** | | |  | |
| **5** | **Expand in Laurent series about z=0** | | |  | |
| **Part – B** | | | | | |
| **6** | | **Expand logat z=0, using Taylor series** | | |  |
| **7** | | **Define with example**   1. **Isolated singular point** 2. **Removable singular point** 3. **Essential singular point** | | |  |
| **8** | | **Prove that z= for |z|<1** | | |  |
| **9** | | **Show that log z = (z-1)-+…when |z-1|<1** | | |  |
| **10** | | **Let in the disk |z|<2π. Find the first 4 terms of the Taylor series around z=0.** | | |  |

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