

Course Code: MAT101

Course Title: Mathematics-I

Semester: Summer-2026

Date: 13.06.2026

Time: 35 minutes

Section: 72_C

Answer all the questions

	Mark:
1) Find whether the following statements are True or False (with justification): - Every differentiable function is continuous. - If a function is one-to-one and onto, then its inverse exists. - If a polynomial has real coefficients and "i" is a root, then "$-i$" must also be a root. - Every continuous function is differentiable. - According to Descartes' Rule of Signs, the number of positive real roots of a polynomial is always exactly equal to the number of sign changes in $f(x)$.	5
2) Consider, $f(x) = \begin{cases} 3x^2 + 2x - 1, & x < 1, \\ 4, & x = 1, \\ x + 3, & x > 1. \end{cases}$ Determine whether $f(x)$ is differentiable at $x=1$.	5
3) Let, $2x^5 - 11x^4 + 16x^3 - x^2 - 6x = 0$	5