SRM Institute of Science and Technology
DEPARTMENT OF MATHEMATICS
21MAB101T: Calculus and Linear Algebra
ACADEMIC YEAR 2022-2023 (ODD)
Tutorial-1 (Unit-2)

1. Find the total differential of $z = tan^{-1}(x/y), (x, y) \neq (0, 0)$.
2. Expand $f(x, y) = 21 + x - 20y + 4x^2 + xy + 6y^2$ in Taylor series of maximum order about the point $(-1, 2)$.
3. If $f(x, y) = tan^{-1}(xy)$, find an approximate value of $(1.1, 0.8)$ using the Taylor's series of quadratic approximation.
4. If $u = x^2y^3$ and $x = e^t$ and $y = sint$ find the value of du/dt.
   Verify by actual substitution.
5. If $z = \sqrt{x^2 + y^2}$ and $x^3 + y^3 + 3axy = 5a^2$, find the value of dz/dx, when $x = a$ and $y = a$.