Q.1 i) Let \( z = e^{x y} \) and \( x = st, y = s + t \). Find \( \frac{\partial z}{\partial s} \) and \( \frac{\partial^2 z}{\partial s \partial t} \) at \( t = 1 \) and \( s = -1 \). (3 points)

ii) The equation \( x y + x z^3 - 2 y z = 5 \) defines \( z \) as an implicit function of \( x \) and \( y \). Find \( \frac{\partial z}{\partial x} \) at the point \( (3, 2, 1) \). (3 points)

Q.2 Find the equation of tangent plane and normal line to the surface \( z = x^2 + y^2 + 1 \) at \( (0, 0, 1) \). (6 points)