Q1. Find and sketch the domain of $\sin^{-1}(y - x)$

Q2. Find $\lim_{(x,y)\to(0,0)} \frac{x^4 - 2y^2}{x^2 + 2y^2}$ and $\lim_{(x,y)\to(0,0)} \frac{x^3 + 2y^3}{x^2 + y^2}$

Q3. The base radius and height of a right circular cone are measured as 10 cm and 25 cm, respectively, with a possible error in measurement of as much as 0.1 cm in each. Use differentials to estimate the maximum error in the calculated volume of the cone.

Q4. Find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$ if $x^2 - y^2 + z^2 - 2z = 5$

Q5. At what point on the ellipsoid $x^2 + y^2 + 2z^2 = 1$ is the tangent plane parallel to the plane $+2y + z = 1$?