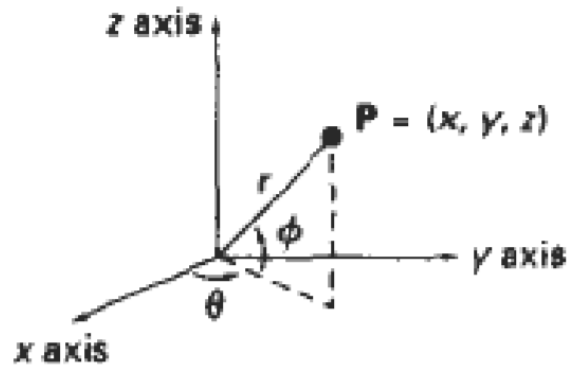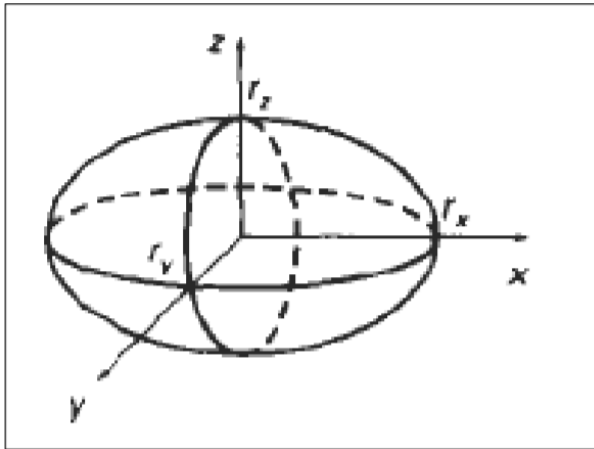- We can also describe the spherical surface in parametric form, using latitude and longitude angles.
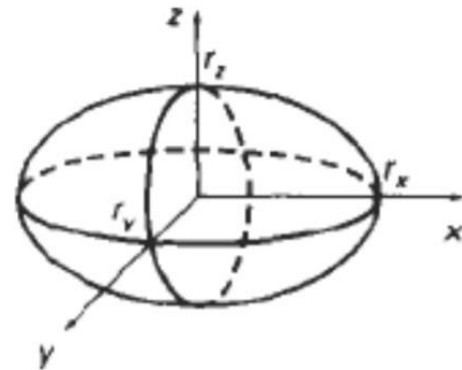
Ellipsoid

- An ellipsoidal surface can be described as an extension of a spherical surface, where the radii in three mutually perpendicular directions can have different values.

Ellipsoid

- The Cartesian representation for points over the surface of an ellipsoid centered on the origin is

$$\left(\frac{x}{r_x}\right)^2 + \left(\frac{y}{r_y}\right)^2 + \left(\frac{z}{r_z}\right)^2 = 1$$
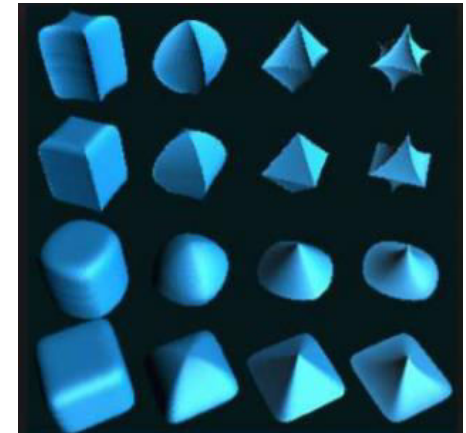
Superquadrics

- Superquadrics are formed by incorporating additional parameters into the quadric equations to provide increased flexibility for adjusting object shapes.

- • The number of additional parameters used is equal to the dimension of the object: one parameter for curves and two parameters for surfaces

    1.Superellipse
    2. Superellipsoid

1.Superellipse

We obtain a Cartesian representation for a superellipse from the corresponding equation for an ellipse by allowing the exponent on the x and y terms to be variable.

$$\left(\frac{x}{r_x}\right)^{2/s} + \left(\frac{y}{r_y}\right)^{2/s} = 1$$