Spherical Coordinates

Given the spherical coordinates:

$$x = r\cos(t)\cos(f)$$

$$y = r\sin(t)\cos(f)$$

$$z = r\sin(f)$$

The inverse relationships can be expressed as:

$$r = \sqrt{x^2 + y^2 + z^2}$$
$$f = \arcsin\left(\frac{z}{r}\right)$$
$$t = \arctan\left(\frac{y}{x}\right)$$