Formula Sheet

Cylindrical to Rectangular

$$x = r\cos\theta$$

$$y = r\sin\theta$$

$$z = z$$

Rectangular to Cylindrical

$$r = \sqrt{x^2 + y^2}$$

$$\tan\theta = \frac{y}{x}$$

$$z = z$$

Spherical to Rectangular

$$x = \rho\sin\phi\cos\theta$$

$$y = \rho\sin\phi\sin\theta$$

$$z = \rho\cos\phi$$

Rectangular to Spherical

$$\rho = \sqrt{x^2 + y^2 + z^2}$$

$$\tan\theta = \frac{y}{x}$$

$$\cos\phi = \frac{z}{\sqrt{x^2 + y^2 + z^2}}$$

Spherical to Cylindrical

$$r = \rho\sin\phi$$
$$\theta = \theta$$

Cylindrical to Spherical

$$\rho = \sqrt{r^2 + z^2}$$
$$\theta = \theta$$