

For spherical coordinates:

$$\hat{e}_r = \sin \theta \cos \varphi \hat{e}_1 + \sin \theta \sin \varphi \hat{e}_2 + \cos \theta \hat{e}_3$$

$$\hat{e}_\theta = \cos \theta \cos \varphi \hat{e}_1 + \cos \theta \sin \varphi \hat{e}_2 - \sin \theta \hat{e}_3$$

$$\hat{e}_\varphi = -\sin \varphi \hat{e}_1 + \cos \varphi \hat{e}_2$$