Handout 2
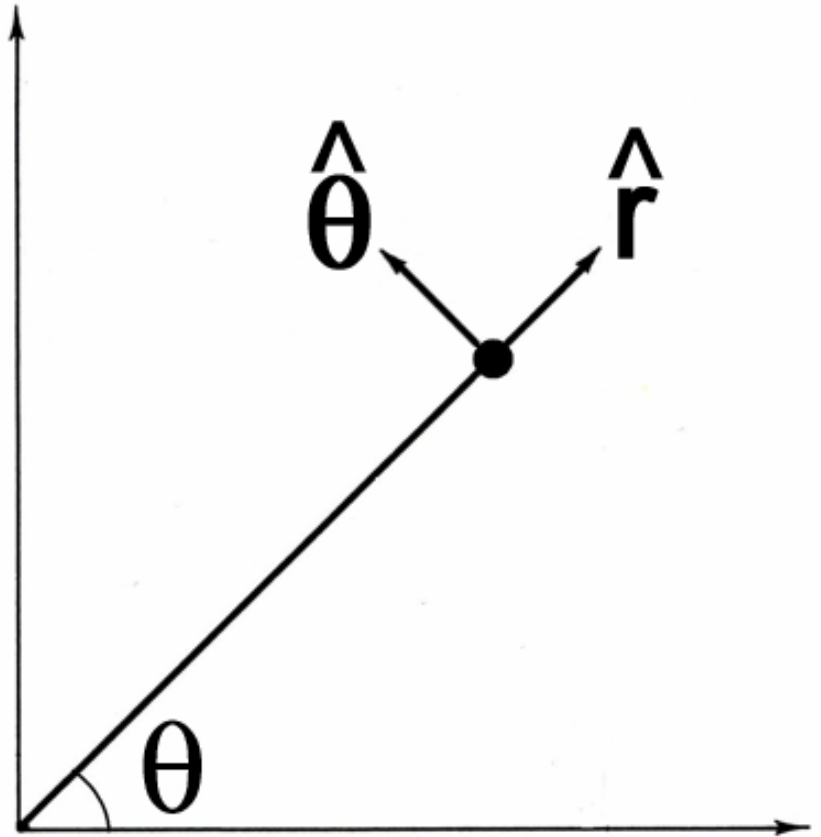## Supplement to Section 3.5.3
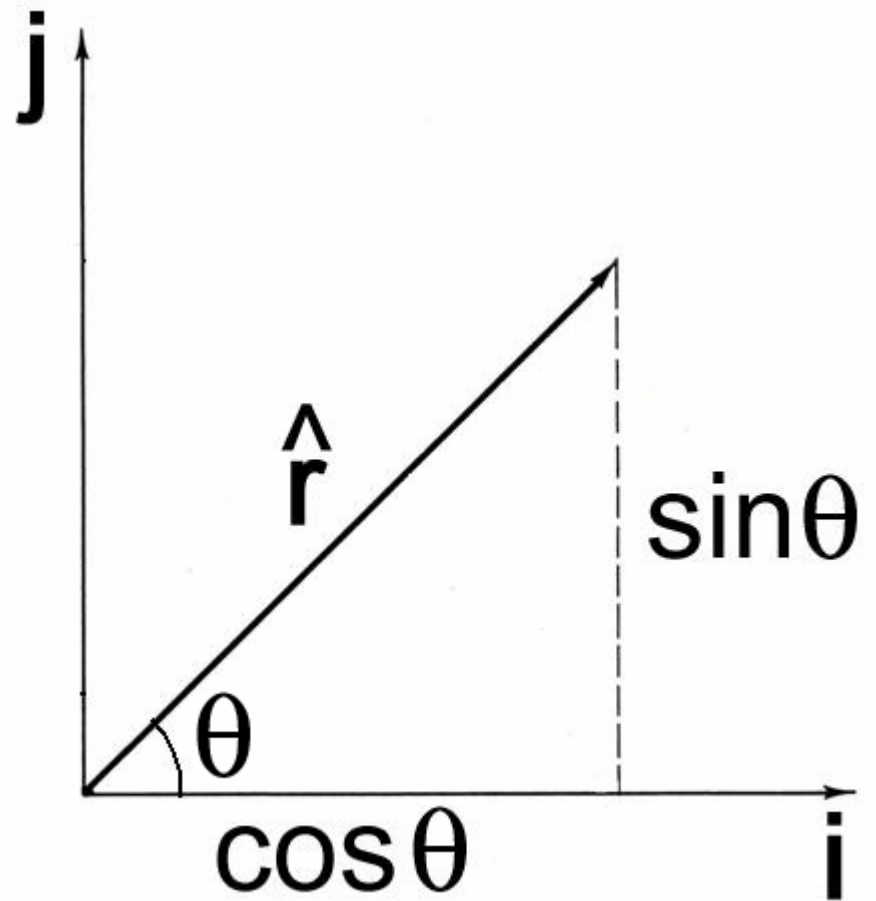Unit vectors in polar coordinates

Unlike **i** and **j** (unit vectors in x and y direction), the directions of the unit vectors in polar coordinates depend on the position of the point under consideration.
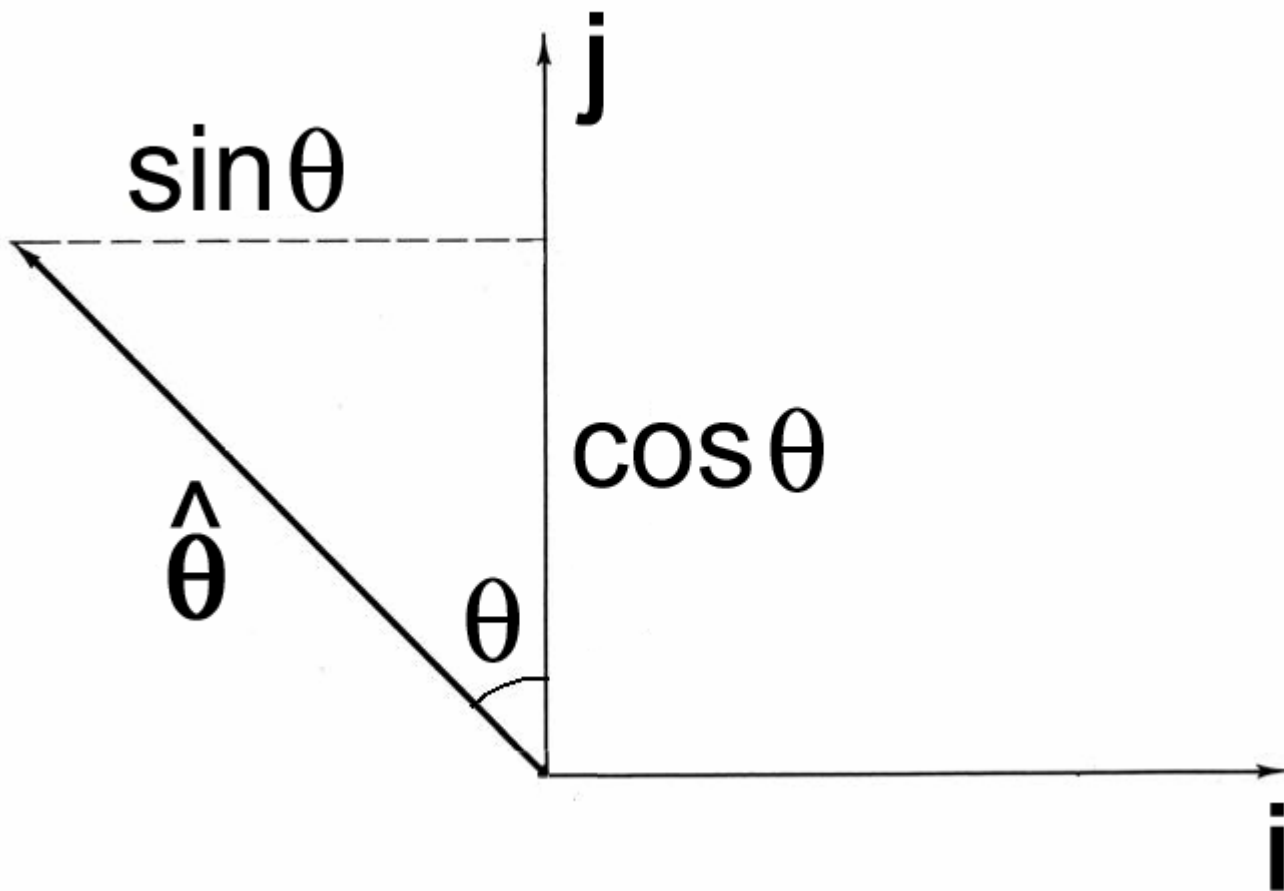
$\hat{\mathbf{r}} = $ unit vector in r direction

$\hat{\boldsymbol{\theta}} = $ unit vector in θ direction

$$\hat{\mathbf{r}} = \mathbf{i}\cos\theta + \mathbf{j}\sin\theta$$

$$\hat{\boldsymbol{\theta}} = -\mathbf{i}\sin\theta + \mathbf{j}\cos\theta$$