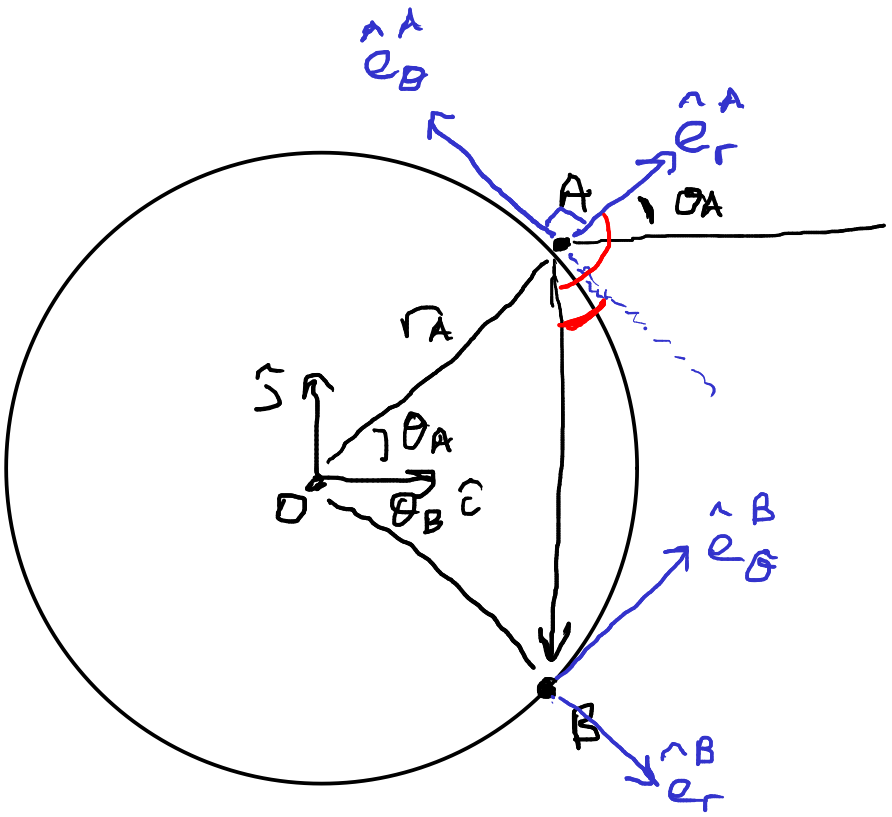
# Polar coordinates




$r_A = 4\,m$ $\quad r_B = 4\,m$

$\theta_A = 30°$ $\quad \theta_B = -45°$

Q: $\vec{r}_{AB}$ how much below horizon for A?

$\hat{e}_r, \hat{e}_\theta$ polar basis

$\hat{e}_r^A = \cos\theta_A \hat{i} + \sin\theta_A \hat{j}$

$\hat{e}_\theta^A = -\sin\theta_A \hat{i} + \cos\theta_A \hat{j}$

A: $\vec{r}_{AB} = \vec{r}_{OB} - \vec{r}_{OA}$

angle $\vec{r}_{AB}$ and $\hat{e}_r$ using dot product, subtract 90°

do calculations in Cartesian coordinates.