

Due casi particolari: $\dot{r}=0$ e $\dot{\theta}=0$

1) $\dot{\theta}=0 \Rightarrow \vec{v} = \dot{r} \hat{e}_r \rightarrow \text{moto rettilineo}$
 $\vec{a} = \ddot{r} \hat{e}_r$

2) $\dot{r}=0 \Rightarrow \begin{cases} \vec{v} = r \dot{\theta} \hat{e}_\theta \\ \vec{a} = -r \dot{\theta}^2 \hat{e}_r + r \ddot{\theta} \hat{e}_\theta \end{cases} \quad |\vec{v}| = r \dot{\theta}$

$$\begin{aligned} \vec{a} &= \hat{e}_r \left(-\frac{v^2}{r} \right) + \frac{dv}{dt} \hat{e}_\theta \\ &= \frac{dv}{dt} \hat{e}_\theta - \frac{v^2}{r} \hat{e}_r \\ &= \frac{dv}{dt} \hat{T} + \frac{v^2}{r} \hat{N} \end{aligned}$$

