

# Summary: Angular Impulse/Momentum Equation 1

**FUNDAMENTAL** equation:

$$(\vec{H}_O)_2 = (\vec{H}_O)_1 + \int_1^2 \sum \vec{M}_O dt$$

**COMPUTING** angular momentum:

$$\begin{aligned} \vec{H}_O &= m\vec{r}_{P/O} \times \vec{v}_P && ; \text{ general} \\ &= m(x\hat{i} + y\hat{j}) \times (\dot{x}\hat{i} + \dot{y}\hat{j}) = m(xy - y\dot{x})\hat{k} && ; \text{ Cartesian} \\ &= m(r\hat{e}_r) \times (\dot{r}\hat{e}_r + r\dot{\theta}\hat{e}_\theta) = mr^2\dot{\theta}\hat{k} && ; \text{ polar} \end{aligned}$$

**NOTE:** O must be a FIXED point! Why?

