
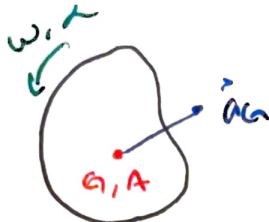
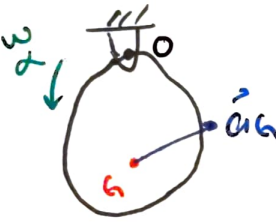
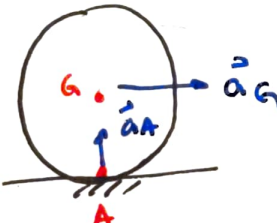


5.A.I Special Cases of Newton-Euler Equations

$$\Sigma \vec{F} = m \vec{a}_G$$

$$\Sigma \vec{M}_A = I_A \vec{\alpha} + \vec{r}_{G/A} \times m \vec{a}_A$$

Point A	Situation	$\Sigma \vec{F}$	$\Sigma \vec{M}_A$
A	 <p>$w = \alpha = 0$</p>	$\Sigma \vec{F} = m \vec{a}_G$	$\Sigma \vec{M}_G = \vec{0}$ $\Sigma \vec{M}_A = \vec{r}_{G/A} \times m \vec{a}_A$
A = G		$\Sigma \vec{F} = m \vec{a}_G$	$\Sigma \vec{M}_G = I_G \vec{\alpha}$
A = 0 (fixed)		$\Sigma \vec{F} = m \vec{a}_G$	$\Sigma \vec{M}_O = I_O \vec{\alpha}$ $I_O \rightarrow$ Parallel Axis Theorem
A, such that $\vec{r}_{G/A} \times \vec{a}_A = \vec{0}$		$\Sigma \vec{F} = m \vec{a}_G$	$\Sigma \vec{M}_A = I_A \vec{\alpha}$