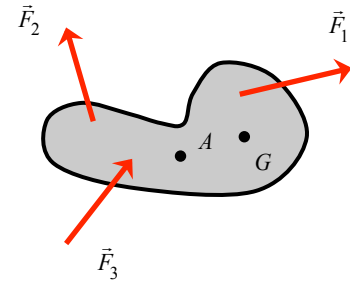


Summary: Work/Energy Equation 1

FUNDAMENTAL equation: $T_2 + V_2 = T_1 + V_1 + U_{1 \rightarrow 2}^{(nc)}$

with:

$$T = \frac{1}{2}mv_A^2 + \frac{1}{2}I_A\omega^2 + m\vec{v}_A \cdot (\vec{\omega} \times \vec{r}_{G/A})$$



SPECIAL CHOICES FOR POINT "A": If A is EITHER the c.m. OR a fixed point, then the kinetic energy equation reduces to:

$$T = \boxed{\frac{1}{2}mv_A^2} + \boxed{\frac{1}{2}I_A\omega^2}$$

translation rotation

PARALLEL AXIS THEOREM: As with the Newton/Euler equation, you will need to use the PAT if you choose A to be anything other than the c.m.

SYSTEM CHOICE: Make your system BIG! Include as many components within system to make workless forces INTERNAL (no work on system). Different choice than for Newton/Euler.

ROLLING WITHOUT SLIPPING: The friction force at a no-slip point does not work. Why? Recall that the no-slip point is stationary – no work is done on a stationary point.

