Ch. 14.3 Work-Energy (Particles)

$$\Sigma T_1 + \Sigma V_1 + U_{1-2}^{NC} = \Sigma T_2 + \Sigma V_2$$ → for systems of particles and ind. particles.

Approach: FBD → kinetics → kinematics → solve

↓

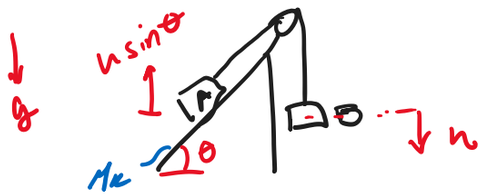
system approach

$$T = \frac{1}{2} m v^2$$

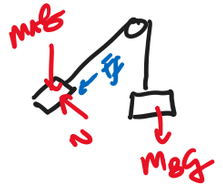
$$V \begin{cases} V_g = mgh \\ V_k = \frac{1}{2} k (\Delta)^2 \end{cases}, \quad \Delta = L - L_0, \ L_0 \text{ is unstretched length}$$

$$U_{1-2}^{NC} = \int_1^2 \Sigma F \cdot \hat{e}_t \, ds = F \Delta s$$

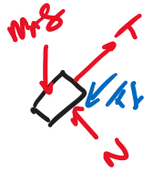
Conceptual example:



FBD - sys



FBD - A



- Does the system conserve energy
  - w/o friction: yes
  - w/friction: no
- Is energy conserved for block A
  - Tension does work → U_{1-2}^{NC}
  - No