

## Summary: Work-Energy Equation 2

**FUNDAMENTAL** equation: the work-energy equation

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

**SOLUTION PROCESS:**

1. Draw free body diagram (FBD) for system of your choice (see comment below on system choice).
2. Write down the work-energy equation.
3. Write down the appropriate kinematics (velocity) equations for the problem.
4. If you have enough equations, solve for the desired unknowns. If you do not have enough equations, then you have probably missed some information from kinematics.

**SYSTEM CHOICE:** Make your choice of system as “large” as reasonable – you want to make workless forces *INTERNAL* to the system.

**CONSERVATION:** If no work is done on the system,  $U_{1 \rightarrow 2}^{(nc)} = 0$ , then energy is conserved.

