

Study Guide

AP Physics - C

Mr. Butler

Work and Kinetic Energy

The student should know or be able to do the following:

1. Describe the quantity of *work*, state its units and use the work formula for constant force to determine the work done for linear motion.
2. Distinguish between positive and negative work, determine the work done on an object by a force acting at an angle to an object's displacement and calculate the total work done on an object by all the acting forces.
3. Describe kinetic energy, compare the kinetic energies of different objects and correctly apply the kinetic energy formula.
4. Correctly apply the equivalence in the Work-Energy Principle to situations involving work and the change in kinetic energy.
5. Correctly express a varying force as a function of x and use integration methods to determine the work done by a varying force.
6. Correctly interpret Force vs Displacement graphs to determine the net work done.
7. Describe the *restoring force* and *force constant* and use Hooke's Law to determine the elastic potential energy of a mass-spring system.
8. Correctly apply the equivalence in the Work-Energy Principle to situations involving work and the change in elastic potential energy.
9. Use integration methods to determine the work done for an object moving along a curved path.
10. Describe the quantity of *power*, state its unit and use the appropriate formula to determine *average* and *instantaneous* power.

NOTE: Review diagrams, worksheets, applets, and handout materials.