

AP Physics C Test #2 Pretest Problem

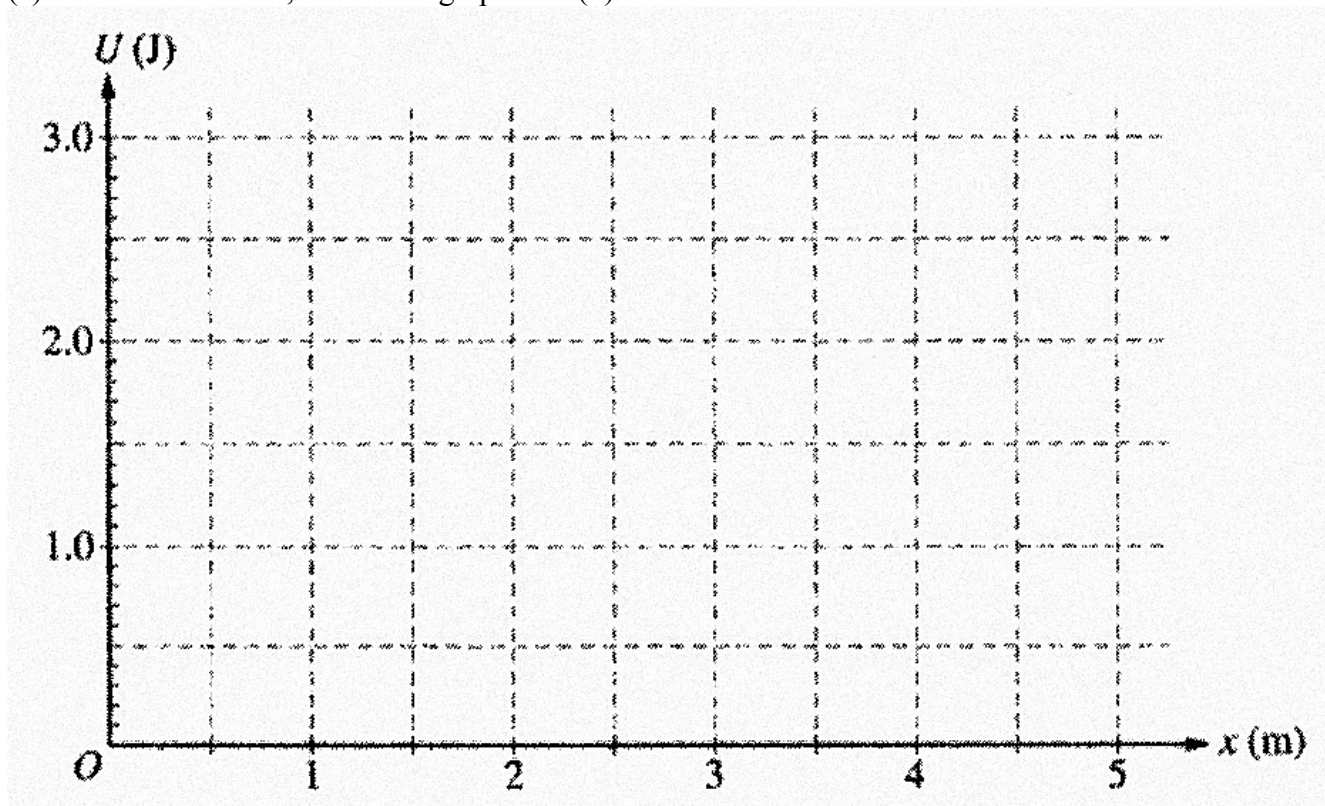
Name _____

Period _____

An object of mass 0.5 kg experiences a force that is associated with the potential energy function

$$U = \frac{4.0}{2.0 + x} \quad \text{where } U \text{ is in joules and } x \text{ is in meters.}$$

(a) On the axes below, sketch the graph of $U(x)$ versus x .



(b) Determine the force associated with the potential energy function given above.

(c) Suppose that the object is released from rest at the origin. Determine the speed of the particle at $x = 2 \text{ m}$.

In the laboratory, you are given a glider of mass 0.5 kg on an air track. The glider is acted on by the force determined in part (b). Your goal is to determine experimentally the validity of your theoretical calculation in part (c).

(d) From the List below, select the additional equipment you will need from the laboratory to do your experiment by checking the line next to each item. If you need more than one of an item, place the number you need on the line.

_____ Meterstick _____ Stopwatch _____ Photogate timer _____ String _____ Spring
_____ Balance _____ Wood block _____ Set of objects of different masses

(e) Briefly outline the procedure you will use, being explicit about what measurements you need to make in order to determine the speed. You may include a labeled diagram of your setup if it will clarify your procedure.