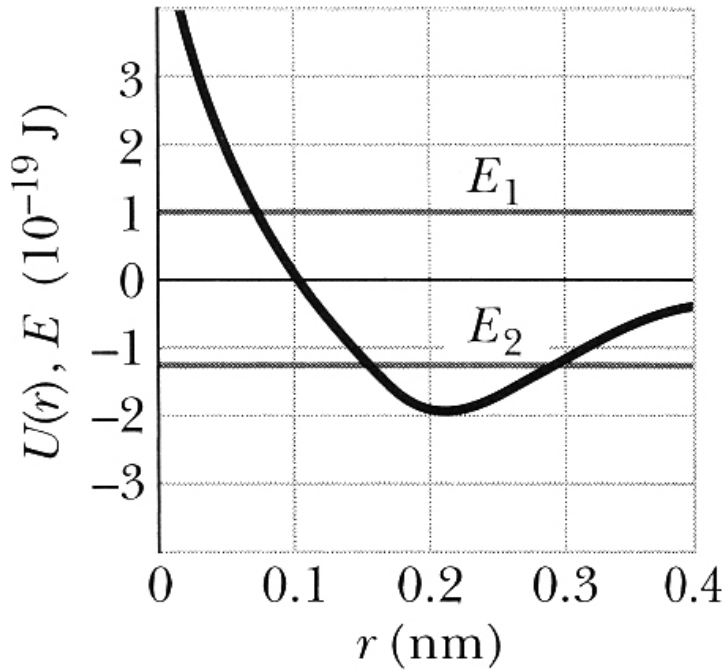


## AP Physics

### Worksheet 02 – Potential Energy



The illustration shows the potential energy of a molecule composed of two atoms separated by distance  $r$  as a function of  $r$ .

Describe the motion of the atoms if:

- The total mechanical energy  $E$  of the system is greater than zero ( $E_1$ )
- If  $E$  is less than zero ( $E_2$ )

For  $E = 1 \times 10^{-19}$  J, and  $r = 0.3$  nm,

- find the potential energy of the system
- total kinetic energy of the system
- force (magnitude and direction) acting on each atom

For what values of  $r$  is the force

- attractive
- repulsive
- zero