

Contemporary Physics I – HW 6

HW 6

Due November 6, 2009

Because I care (and because you've had a rough week of exams, SR homework, and the like), we're gonna make this a short one.

Please answer all questions clearly and concisely. While you need not transcribe the question completely, it should be clear from your answer alone what you are talking about.

You are strongly encouraged to discuss the homework with your classmates, but you must complete the written homework by yourself, and of course, the material you submit must be your own.

Remember, show all of your work!

1. A 4 kg block is attached to a spring with a spring constant $k = 200N/m$, and is stretched an amount $0.2m$.
 - (a) Sketch the potential energy curve for the spring. Make sure that the x -axis goes from at least $-0.2m$ to $0.2m$.
 - (b) Does this curve have any equilibrium positions? If so, where? If so, are they stable or not?
 - (c) How much potential energy is stored in the spring when it is stretched?
 - (d) The block is then released from rest. Where (what value of x) will the block have its maximum kinetic energy? How fast will it go at that moment?
 - (e) At what position, x , will the block turn around and start heading back to the left? How do you know?
2. 5.P.62
3. 5.P.84