Week 7 Reading Questions

Monday Chap. 7.1-2

1) Near the surface of Earth, how is the gravitational potential energy defined? I lift a 5 kg block slowly from the floor to just above my head (about 2 m). About how much work did I do? How much work did the gravitational force of the Earth do? What is the change in the gravitational potential energy of the block?

2) The total mechanical energy of a ball flying through the air consists of what two contributions?

Tuesday Chap 7.3

3) How is the change in potential energy related to the work done by a conservative force?

4) What is meant by work being “path independent?”

Wed. Chap 7.4-5

5) If you know the potential energy function U(x), how can you find the conservative force associated with it?

6) At an equilibrium point, the force on an object = ?

7) What can you say about the potential energy at a point of stable equilibrium?

8) The potential energy for a conservative force is \( U(x) \). At some point \( dU/dx = +3 \text{ J/m} \), that is to say \( U \) increases as \( x \) increases. Which way does the force point?

Thursday, Chap. 13.3-4, Chap 8.1

RQ8 in MasteringPhysics

9) What is the formula for gravitational potential energy that follows from Newton’s law of gravitation? Based on this definition, what’s the corresponding gravitational potential energy of a 1 kg mass on the surface of the Earth?