

These are the notes for the tutorial session #5. The topics including work, kinetic and potential energy, work-energy theorem, power, and conservation of energy.

Some of the problems which are a bit more advanced will be marked with an asterisk (\*). It means that solving them might not help you on the quiz or the exams, but it's fun to think about these problems.

If you haven't gotten any email from me, please stay around after class so that I can get an email address from you.

The textbook is the 9th edition of Physics by Cutnell and Johnson. The numbers are almost the same as 10th edition.

Keywords: Work, Energy, Power, Work-Energy Theorem, Energy Conservation

1) 6.10 from the textbook

Work done by each one of four forces acting on a box on the floor.

2) 6.11 from the textbook

The crate and canceling the work done by friction.

3) 6.20 from the textbook

The sled and friction.

4) 6.26 from the textbook

The snowmobile moving without any drive force.

5) 6.33 from the textbook

The bicyclist and the drag force as an example of a nonconservative force.

6) 6.34 from the textbook

The "Rocket Man" and conservation of energy.

7) 6.37 or 6.38 from the textbook

The gymnast swinging, or, the skateboarder in the drawing.

8) 6.48 or 6.49 from the textbook

The skier and losing touch, or, the frictionless spherical surface and losing touch at an angle  $\theta$ .

9) 6.57 from the textbook

The puck traveling only half way.

10) 6.65 from the textbook

Calculating the average power of the car.

11) 6.70 from the textbook

The car going up and down the hill.

12) 6.78 from the textbook

The surfer and work done by the force of the wave.

13) 6.73 from the textbook

The basketball player and dribbling force needed. Also find the average power of this dribbling.