Physics CS 31 **Fall 2010**

Set #7 - for Wd Nov. 10

Read HR&K	Ch. 12 - Sects. 12.1, 12.2, 12.3, 12.5, 12.6
Read K&K	Ch. 2 (p. 87-100), Ch. 4 - Sects. 4.1 - 4.7, Ch. 5 - Sects. 5.1 - 5.4.
Read Feynman Vol. 1	Ch. 13, Ch. 14

From HR&K:

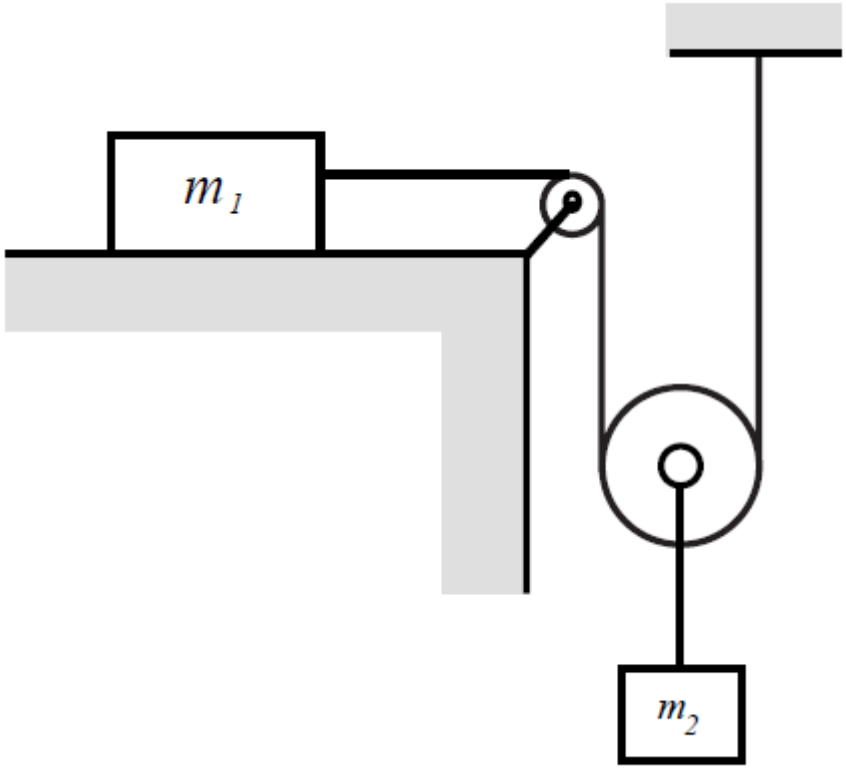
Ch. 11 Exercise 6, 31. Problems 11, 14.

Ch. 12 Exercises 7, 18. Problem 4.

From K&K:

Ch. 2 Problems 2.13, 2.17, 2.35, 2.37. **Extra Credit 2.18**

1. In the system shown below the ropes and the pulleys are massless. There is no friction anywhere. Find the acceleration of each block.



2. The engine of a racing car of mass m delivers a constant power P at full throttle.

Assuming that friction is proportional to the velocity, find an expression for $v(t)$ if the car accelerates from a standing start at full throttle. Does your solution behave correctly as $t \to \infty$?

3. a) Evaluate the work done by the force $\vec{F} = (x^3 + y^3)\hat{i} - 2xzy^2\hat{j} + (x + y + z)\hat{k}$ along the path defined by $y = x^2$, $z = 2$ and $0 \leq x \leq 1$.
b) Repeat for the force $\vec{F} = \theta\hat{\theta}$ along a counterclockwise circular path of unit radius centered at the origin.