The problems for Lecture 31 are Chapter 13 problems 7, 19, 20, 23, 24, 25 from the text.

No problems are assigned for Lecture 32.

The following additional problems are assigned:

1. In order to hang a load of mass $M_1=30$ kg from the horizontal, flat roof of a building, a plank of length $l=2.4$ m is placed on the roof. One end is held in place with a chunk of concrete of mass $M_2=15$ kg and the other supports the load $M_1$ with a light rope. How far can the end of the plank reach without tipping over? Neglect the mass of the plank.

2. A box 0.8 m long and 1.2 m tall is placed in a flat-bed truck. The truck accelerates at a rate of 2 m/s$^2$. Will the box topple over?

3. A uniform plank of length 5 m and weight 225 N rests horizontally on two supports with 1.1 m of the plank hanging over the right support. To what distance $x$ can a person who weighs 450 N walk on the overhanging part of the plank before it begins to tip?