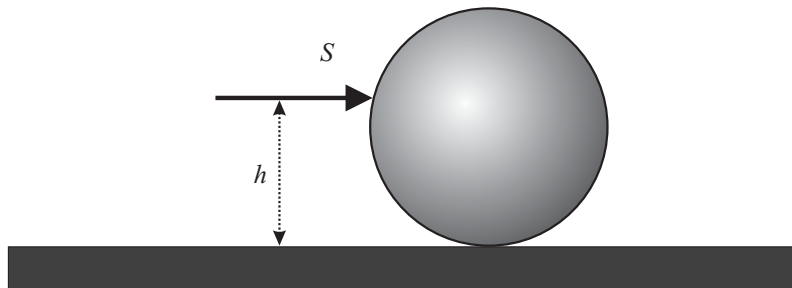


Mekanik II M2, 5C1140

Hand in assignment 4, HT 2004

A football, which can be thought of as a homogeneous spherical shell of mass m and radius r , is given a kick that is parallel to the horizontal ground, see the figure. The kick imparts a horizontal impulse S to the ball at height h above the ground.

- For what value of h will the ball have pure translational motion immediately after the kick?
- How large fraction of the kinetic energy of the ball remains when it has started to roll without sliding (due to the friction from the ground). Assume an initial translational motion.



The solutions, which must have explanative *text* in English, are intended to start from general laws and definitions. All essential steps in the calculations must be included.

Mark the solutions with your *name* and number as well as *my name* (Hanno Essén). They must be *tidy* and easy to read, as well as correct.

The last day for handing in this assignment is Tuesday, October 12.