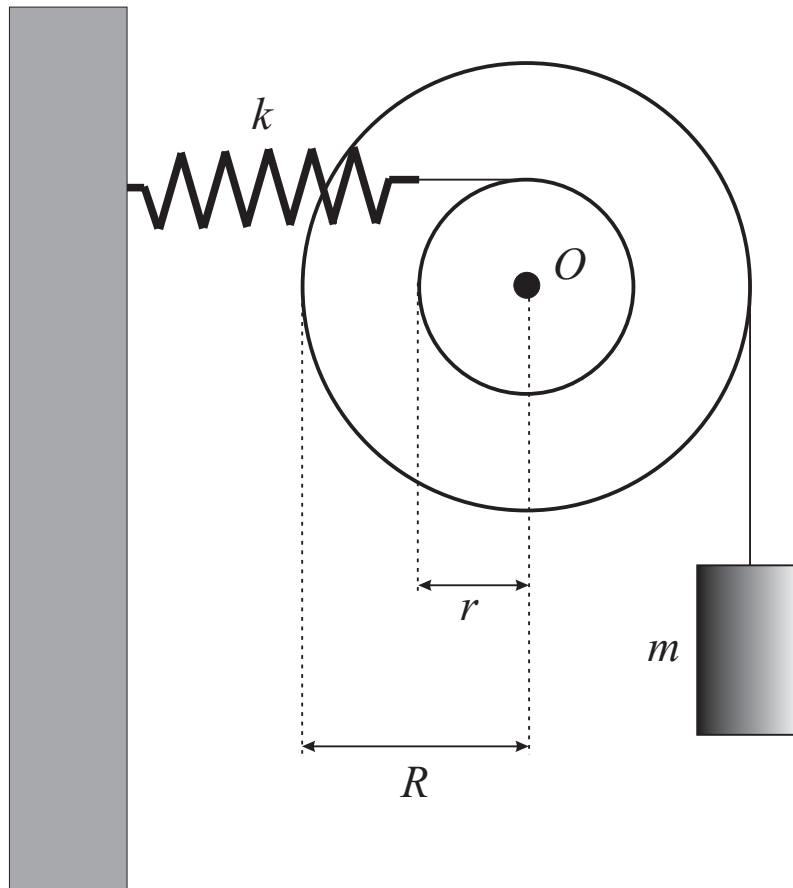


Mekanik II M2, 5C1140

Hand in assignment 3, HT 2005

Two wheels, of radii r and R respectively, are rigidly connected and rotate freely, as a single body, about a horizontal axis O . The entire body has mass M and moment of inertia I with respect to the rotation axis. A wire wound round the smaller wheel is connected to a wall via a horizontal spring with stiffness k . Another wire wound round the larger wheel sustains a weight of mass m . Determine the period for oscillations about the equilibrium position of the system.



Answer: The period is,

$$T = 2\pi\sqrt{\frac{I + mR^2}{kr^2}}.$$

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 Wednesday, October 5.