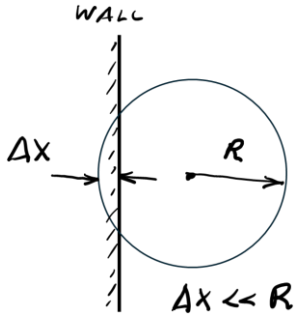
Homework 24

1. An air balloon, when it makes a weak impact with a wall, deforms as shown in the figure. In this case, the maximum deformation $x$of the balloon is much smaller than its radius $\boldsymbol{R}$. Neglecting the change in the excess pressure $\boldsymbol{\Delta p}$ of the air inside the balloon and the elasticity of its shell, estimate the duration of the collision with the wall. The mass of the balloon is $\boldsymbol{m}$.



2. A rotating hoop of radius $\boldsymbol{R}$ falls vertically onto a horizontal plane and rebounds from it with speed $\boldsymbol{v}$ at an angle of $\mathbf{30}°$, no longer rotating. What was the angular velocity of the hoop before the impact?