

A boy kicks a ball giving it an initial velocity  $\vec{v}_0$  with  $v_0 = |\vec{v}_0| = 5\text{m/s}$  and an angle  $\theta = 30^\circ$ . There is a wall in front of the boy, at distance  $d = 3\text{m}$ . When the ball bounces on the ground the  $y$ -component of its linear momentum  $\vec{p}$  changes sign, but also loses 10% of its absolute value. When the ball bounces on the wall the same happens to the  $x$ -component. After a few bounces the ball goes back to the boy. How many bounces? What is the time of each bounce? What is the vector velocity  $\vec{v}$  when the ball bounces back from the wall? What is the position of the ball in that moment?

