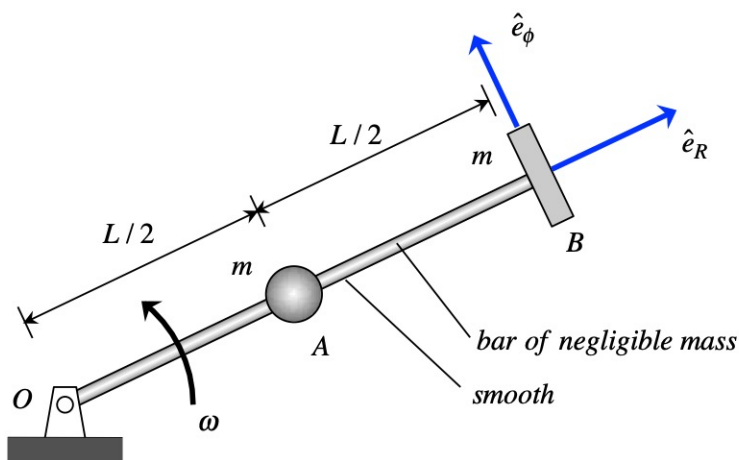


Homework H.4.S

Given: Particle B having a mass of m is rigidly attached to arm OB, where OB has negligible mass and a length of L . OB is pinned to ground at end O and is able to rotate about O without any frictional resistance. A second particle A (also having a mass of m) is able to slide along arm OB. When OB is rotating with an rotational speed of $\omega = \omega_1$, particle A is released from rest with respect to OB at the midpoint of the arm. Particle A slides outward on arm OB, eventually impacting particle B. The coefficient of restitution for the impact of A with B is e .

Find: Determine the velocity of A immediately after its impact with B. Write your answer as a vector in terms of its \hat{e}_R and \hat{e}_ϕ components.



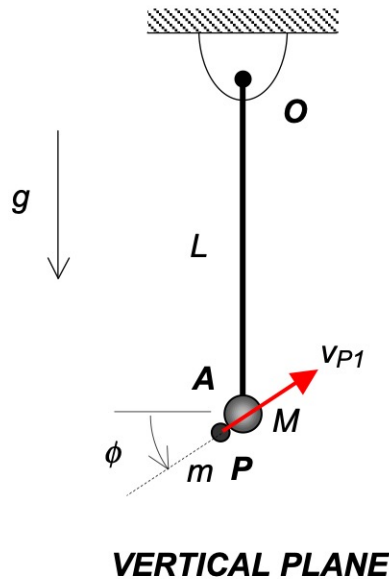
HORIZONTAL plane

Please leave your final answer in terms of, at most, m , L , ω_1 and e .

Homework H.4.T

Given: Rigid arm OA (having length L and having negligible mass) is pinned to ground at end O. A particle of mass M is attached to end A of OA. At instant "1", a pellet P (having a mass of m) strikes the stationary particle A with a speed of v_{P1} in the direction shown below in the figure. At the end of a short time interval impact, P sticks to A.

Find: Determine the angular speed of arm OA immediately after P sticks to A.



Use the following parameters in your analysis: $\phi = 30^\circ$, $L = 4$ ft, $mg = 8$ lb, $Mg = 12$ lb and $v_{P1} = 150$ ft/s.