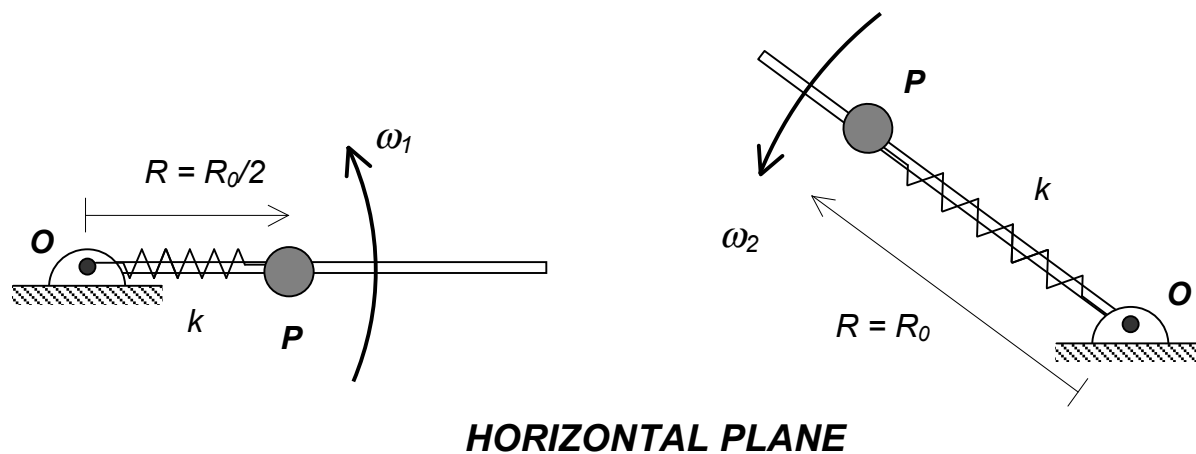


Homework H.4.R

Given: A particle P, having a mass of m , is free to slide on a smooth, lightweight bar. The bar is free to rotate in a horizontal plane about a vertical shaft passing through O. A spring, having a stiffness k and unstretched length R_0 , is connected between P and O. The spring is compressed to half of its unstretched length and released when the bar has a rotational speed of ω_1 , as shown in the figure below left.

Find: For the position when $R = R_0$ (shown in the figure below right):

- Determine the rotation rate ω_2 of the bar;
- Determine the value of \dot{R} .



Leave your final answers in terms of m , k , R_0 and ω_1 .