## Homework H.4.R

Given: Particle P, having a mass of $m$, is able to slide on the smooth, horizontal top of a table. A flexible cable is attached to P , with the cable being fed through a hole in the table at O . A constant force $F$ acts on the other end of the cable. The system is released with P being at a radial distance $R=R_{1}$ from O , and with P having a velocity perpendicular to OP with a speed of $v_{P 1}$.

Find: Determine the numerical values for $\dot{R}$ and $\dot{\phi}$ when P has moved to a position for which $R=R_{2}$.


Use the following parameters in your analysis: $m=2 \mathrm{~kg}, R_{1}=1.5 \mathrm{~m}, R_{2}=0.5 \mathrm{~m}, v_{P 1}=5 \mathrm{~m} / \mathrm{s}$ and $F=236 \mathrm{~N}$.

