

3. (25%) A cylinder with mass  $m$  has a string wrapped around it (as shown in Fig.3) and is released from rest. The radius of the cylinder is given as  $r$ .
- (a) (15%) Determine the velocity of C as function of time.
- (b) (10%) Determine the acceleration of C.

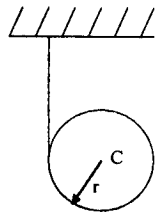


Fig. 3

4. (25%) As shown in Fig.4, the thin ring of radius  $r$  and mass  $m$  is displaced a small amount along the curved surface. If it rolls without slipping, determine the frequency of oscillation when it is released.

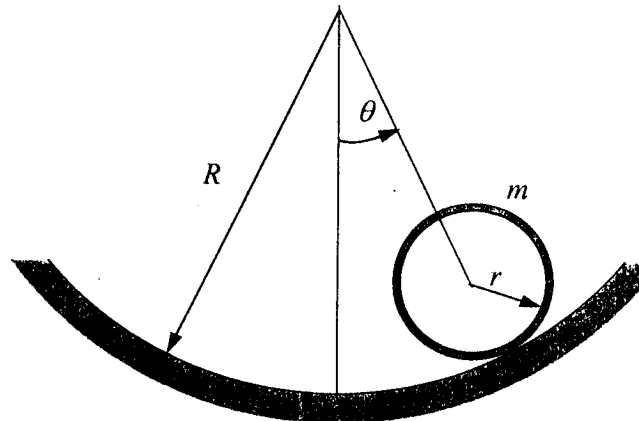


Fig. 4