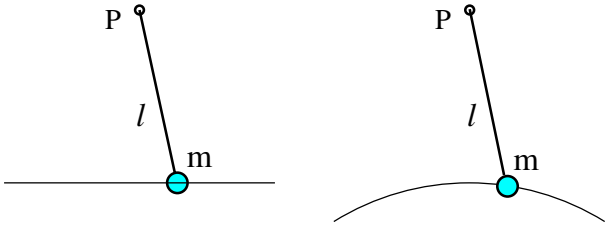
[mex251] Restoring force of elastic string

An elastic string of stiffness k and negligible mass has length ℓ_0 when relaxed. One end of the string is fixed to the fixed pivot P and the other end to a block of mass m that can slide without friction
(a) along a straight line as shown on the left,
(b) along a circular line of radius r as shown on the right.
In the rest position of the block the string is stretched to length $\ell = 3\ell_0/2$. Find the angular frequency ω of small-amplitude oscillations of the block about its rest position.



Solution: