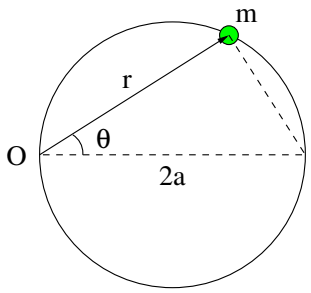
[mex50] Crash course on circular orbit

A particle of mass m moves on a circular orbit of radius a passing through the center O of a power-law central force potential $V(r) = -\kappa/r^\alpha$. (a) Determine the exponent α for which such an orbit exists. (b) Find the angular momentum ℓ and the energy E of this orbit. (c) Determine the period τ of this circular orbit as a function of a, m, κ.



Solution: