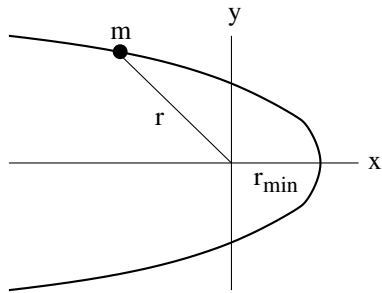## [mex44] Cometary motion on parabolic orbit

Determine a parametric representation $x(\eta), y(\eta), t(\eta), \vartheta(\eta)$ for the parabolic motion in time of a comet with mass m in the central force potential $V(r) = -\kappa/r$. Start from the general integral expression for $t(r)$ and use the parametrization $r = r_{min}(1 + \eta^2)$.

Solution: