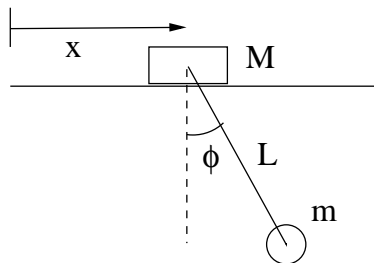## [mex233] Pendulum with sliding pivot: reduction to quadrature

A block of mass M is free to slide horizontally on an airtrack with negligible friction. Suspended from the block by a rod of negligible mass and length L is a mass m swinging in a vertical plane. Reduce the solution $\phi(t), x(t)$ to quadrature for the case $\dot{x}(0) = \dot{\phi}(0) = 0$, $\phi(0) > 0$.

Solution: