Vitesse au point C.

$E_{meca\,C} = E_{cin\,C} + E_{pot\,C}$

ici : $h_C = 0$

$h_C = h_D = 0$

$E_{meca\,C} = \frac{1}{2} . M . V_C^2 + \underbrace{M . g . h_C}_{0}$

$E_{meca\,A} = E_{meca\,B} = E_{meca\,C}$

$E_{meca\,A} = E_{meca\,C}$.

$\frac{1}{2} . M V_A^2 + M g h_A = \frac{1}{2} . M V_C^2$

$V_C^2 = \frac{1}{2} \frac{M . V_A^2 . 2}{M} + \frac{2 . M g h_A}{M}$

$V_C^2 = V_A^2 + 2 . g . h_A$

$V_C = \sqrt{V_A + 2 . g h_A}$

Force de frottement f entre C et D.

$E_{meca\,D} = E_{cin\,D} + E_{pot\,D} = - W_{frottement}$. $h_C = h_D = 0$

$= \underbrace{\frac{1}{2} . M . V_D^2}_{0} + \underbrace{M . g . h_D}_{0} = - W_{frottement}$

$E_{meca\,D} = E_{meca\,A} = E_{meca\,B} = E_{meca\,C} = - W_{frottement}$

Calcul du travail

$W_{frottement} = \|\vec{F}\| . d$

$E_{meca\,D} = E_{meca\,C} = - W_{frottement}$.

$E_{meca\,C} = \frac{1}{2} . M V_C^2 = - \|\vec{F}\| . d$

$\|\vec{F}\| = - \frac{1}{2} . \frac{M . V_C^2}{d}$

$\vec{F} = \|\vec{R}\| . \cos\alpha$