Notas de Aula - Projeto 4 -
(Equações Diferenciais)

Veja projeto 4

Runge - Kutta 2ª ordem

$t=0$: $x(0)$, $v(0)$, $a(0)$ ← início (Sabe-se $a(t)$)

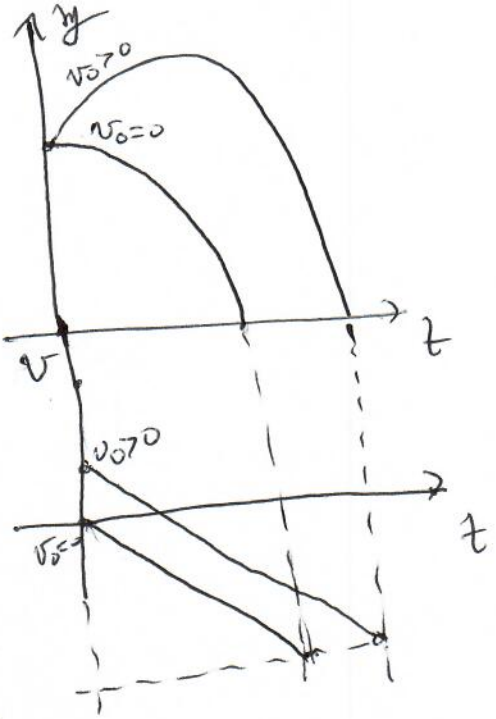
$t=\varepsilon$ $\begin{cases} a(0) \\ v(\varepsilon/2) = v(0) + \frac{\varepsilon}{2} a(0) \\ x(\varepsilon) = x(0) + \varepsilon\, v(\varepsilon/2) \end{cases}$

$t=2\varepsilon$ $\begin{cases} a(\varepsilon) \\ v(3\varepsilon/2) = v(\varepsilon/2) + \varepsilon\, a(\varepsilon) \\ x(2\varepsilon) = x(\varepsilon) + \varepsilon\, v(\frac{3}{2}\varepsilon) \end{cases}$

$t=3\varepsilon$ $\begin{cases} a(2\varepsilon) \\ v(5\varepsilon/2) = v(\frac{3}{2}\varepsilon) + \varepsilon\, a(2\varepsilon) \\ x(3\varepsilon) = \varepsilon\, v\, v(5/2\,\varepsilon) \end{cases}$

⋮

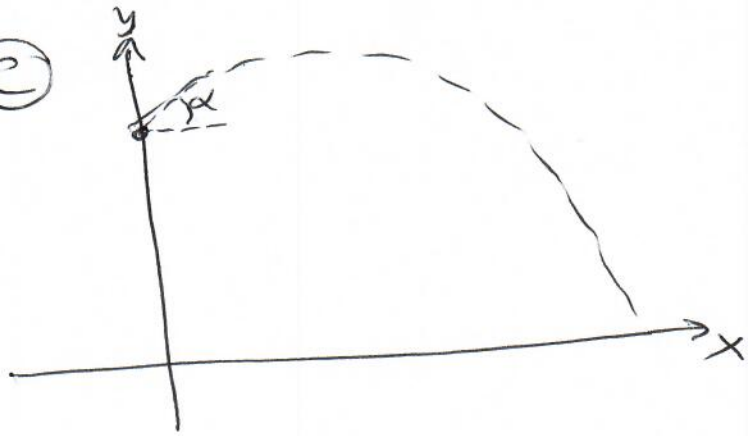
Subprojeto (A)



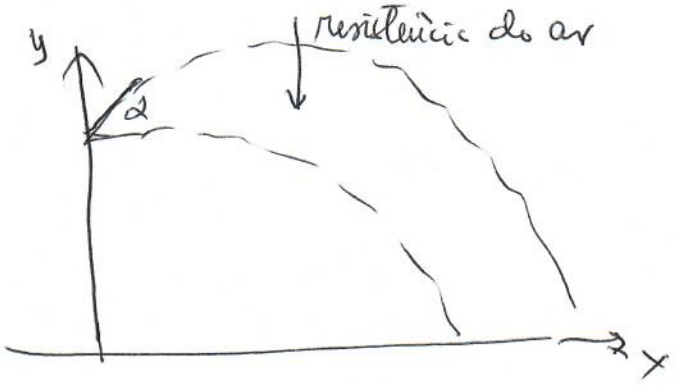
Subprojeto (B) (como no A com resistência do ar.

$F_{resistive} = -\gamma \vec{v}$ (tem sentido contrário ao de $\vec{v}$ — tome cuidado)

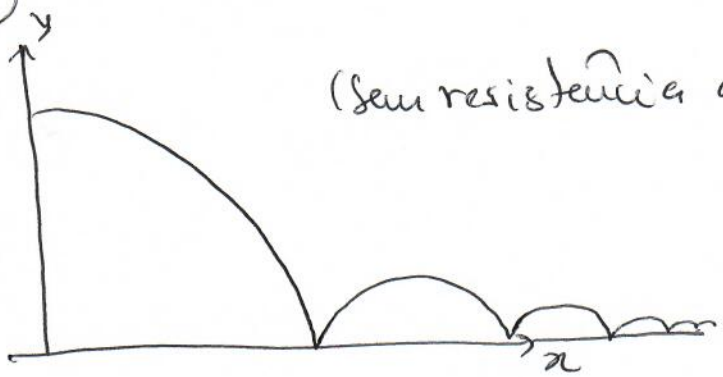
Subprojeto (C)



Subprojet (D)

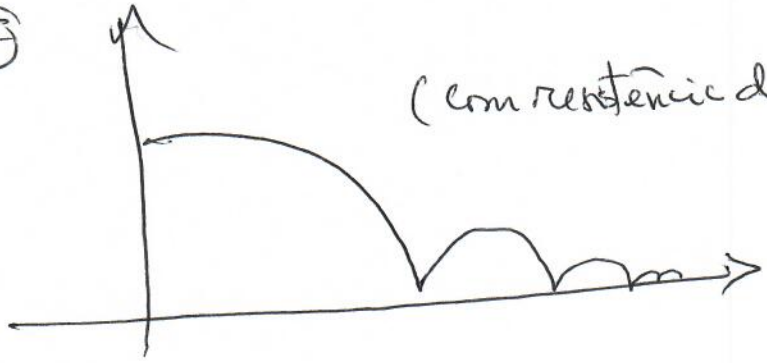


Subprojet (E)



(Sem resistência do ar)

Subprojet (F)



(Com resistência do ar.