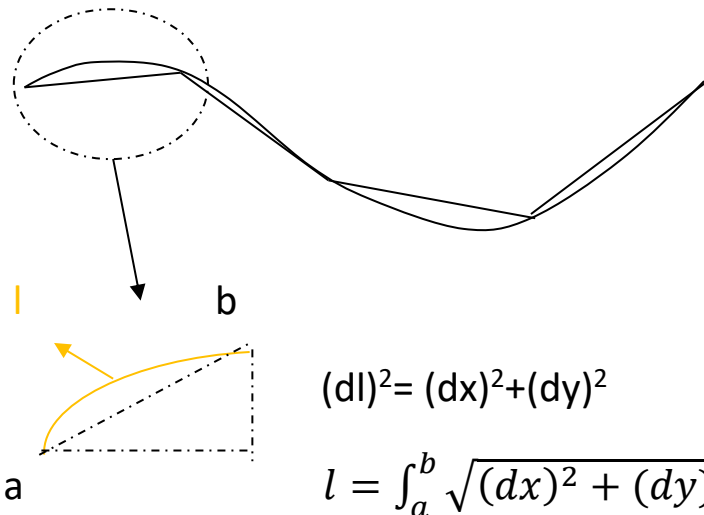


ARCLENGTH:



i sabent la definició de derivada: " $f'(x) = dy/dx$ "

$$l = \int_a^b \sqrt{1 + (f'(x))^2} dx$$

En triangle no rectangle $s = \int_a^b \sqrt{(x'(t))^2 + (y'(t))^2} dt$

$$x(t) = u(t) \quad i \quad y(t) = v(t) \quad s = \int_a^b \sqrt{\left\| \frac{d}{dt} \vec{r}(u(t), v(t)) \right\|^2} dt =$$

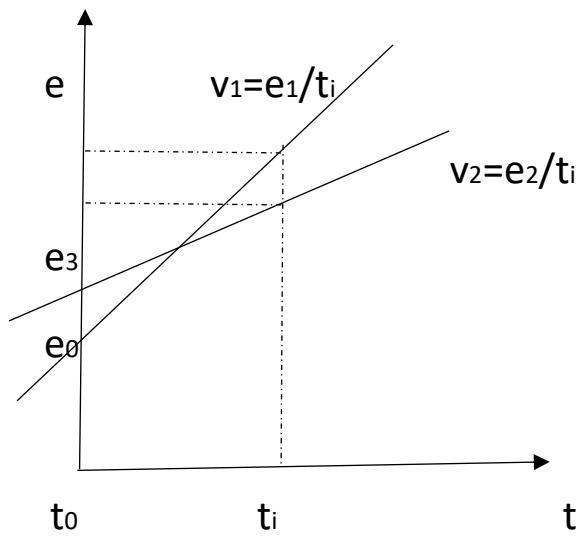
$$= \int_a^b \sqrt{u'(t)^2 \vec{r}_u \vec{r}_u + 2u'(t)v'(t) \vec{r}_u \vec{r}_v + v'(t)^2 \vec{r}_v \vec{r}_v} dt$$

On \vec{r}_u i \vec{r}_v són els respectius vectors unitaris de $u(t)$ i $v(t)$.

$$ds^2 = (du \ dv) \begin{bmatrix} E & F \\ F & G \end{bmatrix} \begin{bmatrix} du \\ dv \end{bmatrix} \quad \text{on } E = \vec{r}_u \vec{r}_u, \quad F = \vec{r}_u \vec{r}_v, \quad G = \vec{r}_v \vec{r}_v$$

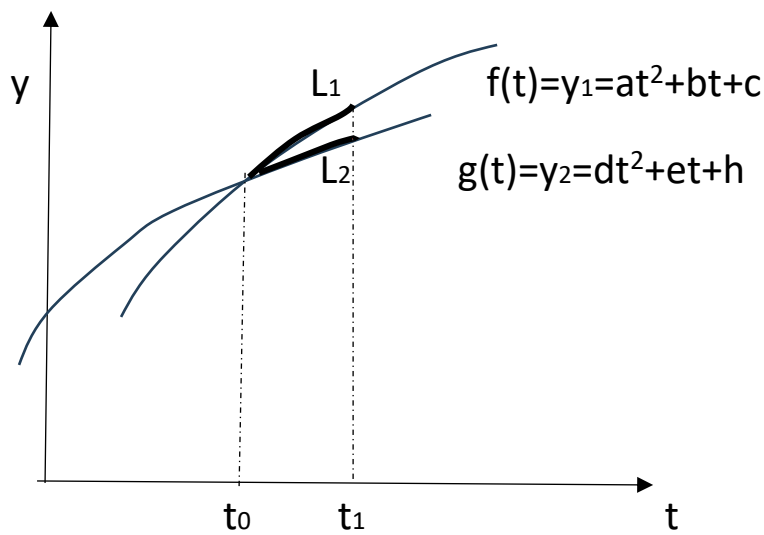
i on $\vec{r} = \vec{u} + \vec{v}$ si \vec{u} fos perpendicular a \vec{v} el terme

$2u'(t)v'(t)\vec{r}_u \vec{r}_v$ no existiria



$$e_1 = v_1 \cdot t_i + e_0 \quad \text{on} \quad e_0 = v_1 \cdot t_0$$

$$e_2 = v_2 \cdot t_i + e_3 \quad \text{on} \quad e_3 = v_2 \cdot t_0$$



$$\text{pendent } 1 = f'(t) = \frac{f(t_1) - f(t_0)}{t_1 - t_0}$$

$$\text{longitud}_1 = \int f'(t) = \int_{t_i}^{t_j} \sqrt{\Delta t^2 + \Delta y^2} \quad t_j > t_i$$

$$\int L_1 = \int_{t_i}^{t_j} \sqrt{(t_1 - t_0)^2 + (f(t_1) - (t_0))^2} \cdot \frac{dt}{dt} =$$

$$= \int_{t_i}^{t_j} \sqrt{\frac{(t_1-t_0)^2}{dt^2} + \frac{(f(t_1)-(t_0))^2}{dt^2}} .dt = \int_{t_i}^{t_j} \sqrt{1 + f'(t)} . dt$$

Mentre que $L_2 = \int_{t_i}^{t_j} \sqrt{1 + g'(t)} . dt$