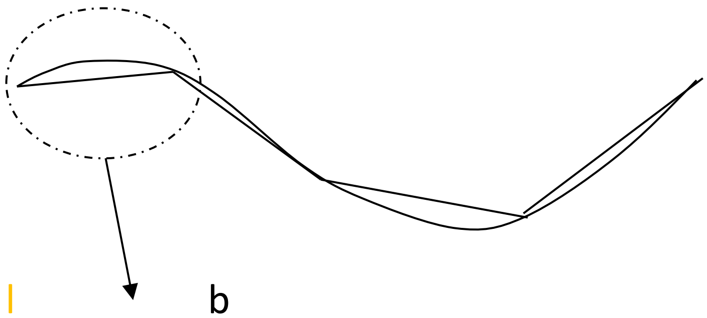
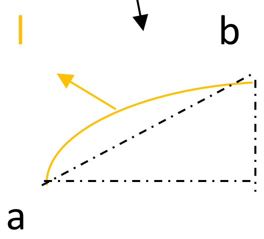
ARCLENGTH:





$(dl)^2 = (dx)^2 + (dy)^2$

$$l = \int_a^b \sqrt{(dx)^2 + (dy)^2}$$

i sabent la dedinició de derivada: “f’(x)= dy/dx”

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

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

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

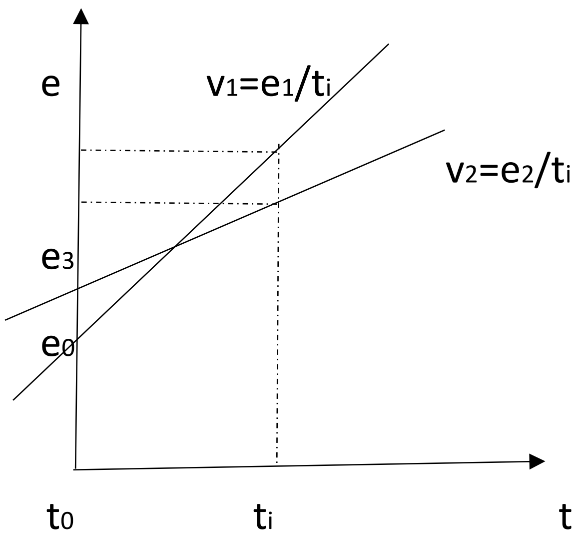
$$= \int_a^b \sqrt{u'(t)^2 \overrightarrow{r_u r_u} + 2u'(t)v'(t)\overrightarrow{r_u r_v} + v'(t)^2 \overrightarrow{r_v r_v}}\, dt$$

On $\overrightarrow{r_u}$ i $\overrightarrow{r_v}$ són els respectius vectors unitaris de u(t) i v(t).

$ds^2 = (du \;\; dv)\begin{pmatrix} E & F \\ F & G \end{pmatrix}\begin{pmatrix} du \\ dv \end{pmatrix}$ on $E=\overrightarrow{r_u r_u}$, $F=\overrightarrow{r_u r_v}$, $G=\overrightarrow{r_v r_v}$

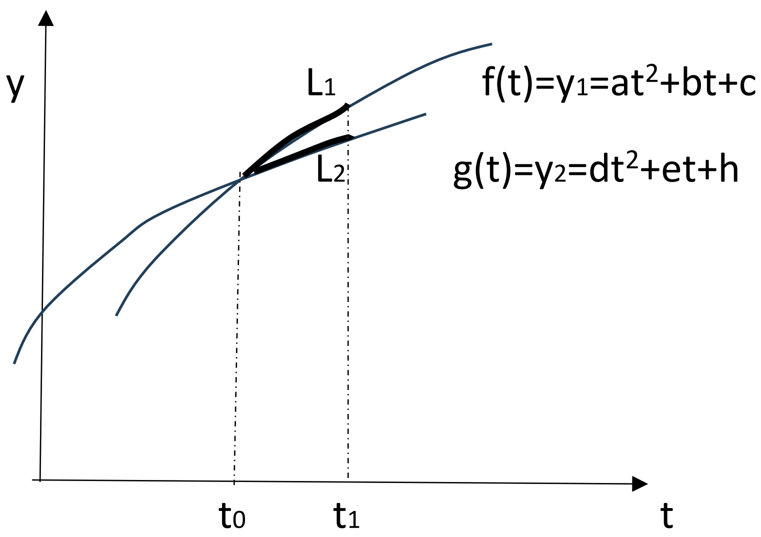
i on $\vec{r} = \vec{u} + \vec{v}$ si $\vec{u}$ fos perpendicular a $\vec{v}$ el terme

$2u'(t)v'(t)\overrightarrow{r_u r_v}$ no existiria



$e_1 = v_1.t + e_0$ on $e_0 = v_1.t_0$

$e_2 = v_2.t + e_3$ on $e_3 = v_2.t_0$



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

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

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

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

Mentre que L2= $\int_{t_i}^{t_j} \sqrt{1 + g'(t)}\,.\,dt$