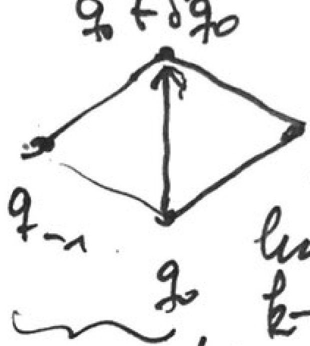
$$\frac{\partial L(q_0 + \delta q_0, \dot q_0 + \delta \dot q_0)}{\partial \dot q_0} \equiv f(\dot q_0) \quad \delta q_0$$

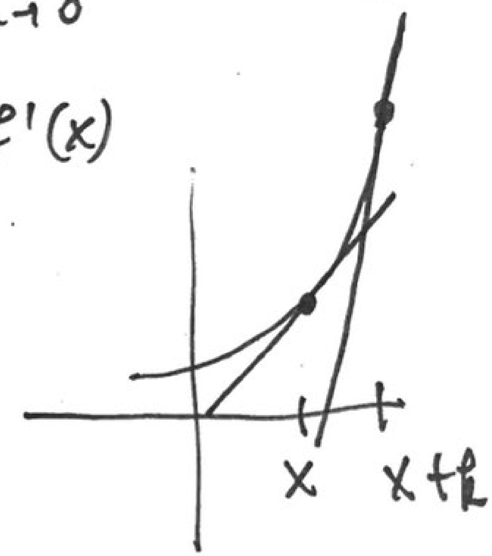
$$- \frac{\partial L(q_1, \dot q_1 + \delta \dot q_1)}{\partial \dot q_1} \equiv f(\dot q_1) \quad \delta q_0$$

$$+ \frac{\partial L(q_0 + \delta q_0, \dot q_0)}{\partial q_0} \delta q_0 \, dt$$




$\lim_{k\to 0} \lim_{h\to 0}$ $dt$ $= f'(x)$

$\lim_{k\to 0} f'(x+k) = \dfrac{f(x+h+k) - f(x+k)}{h}$




weil immer auch $\lim_{\delta q_0 \to 0}$ gemeint ist

$$= \frac{\partial L(q_0, \dot q_0)}{\partial q_0} \delta q_0 \, dt$$

$$\frac{d f(x + dx)}{dx} = \frac{d f(x)}{dx}$$

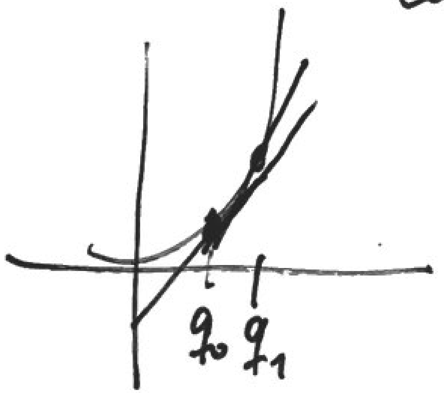
$$\lim_{h\to 0} \frac{f(x+h) - f(x)}{h} = f'(x)$$

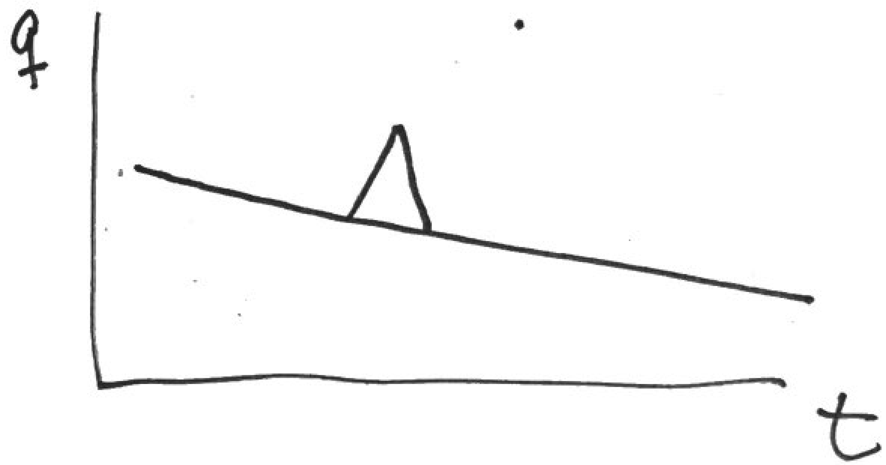
$$\equiv f(t_1) - f(t_0) \equiv\ = \partial L(q(t_0), \dot q(t_0)) \qquad L \circ q,\ L \circ \dot q$$

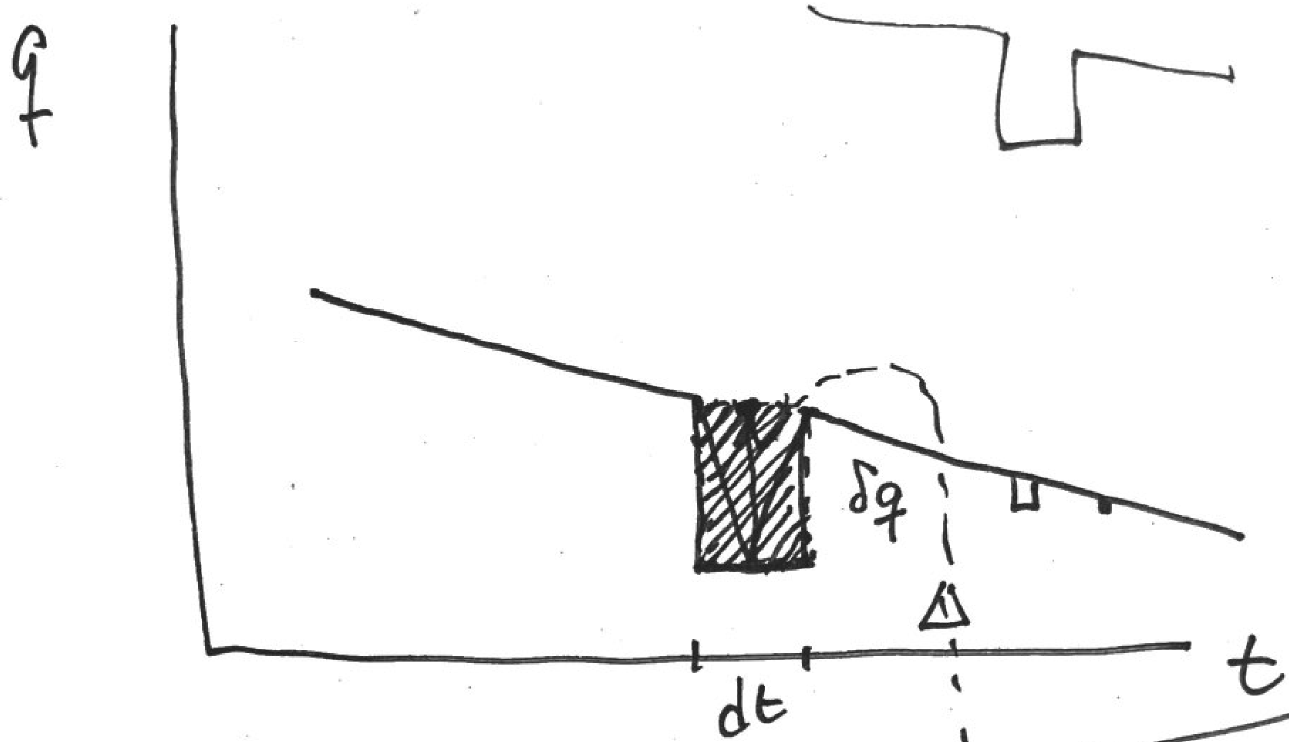
$$= \left[ - \frac{\partial L(q_1,\dot q_1)/\partial \dot q_1 - \partial L(q_0,\dot q_0)/\partial \dot q_0}{dt} + \frac{\partial L(q_0, \dot q_0)}{\partial q_0} \right] \delta q_0\, dt \qquad (60)$$

$$= \left[ - \frac{d}{dt} \frac{\partial L(q_1,\dot q_1)}{\partial \dot q_1} + \frac{\partial L(q_0,\dot q_0)}{\partial q_0} \right] \delta q_0\, dt$$

$$= \delta S = 0 = \left[ - \frac{d}{dt} \frac{\partial L(q,\dot q)}{\partial \dot q} + \frac{\partial L(q,\dot q)}{\partial q} \right] \delta q\, dt$$






ist klein, also alles, was Euler als Flächenänderung betrachtet.

$$0 = \delta S = \overbrace{\delta q \, dt} \begin{bmatrix} \lim \lim & \cdots \\ \cdots & \cdots \end{bmatrix}$$

$$(\delta q \, dt \neq 0) \rightarrow [\quad] = 0$$

ist E-L-Glg (siehe vorheriges Blatt)