$\boxed{\text{Analyse}}$

$f(x) = ax^2 + bx + c$

f

fonction

$\boxed{\text{Vitesse}}$

$$v = \frac{d}{t}$$

VITESSE MOYENNE

10' 3 km

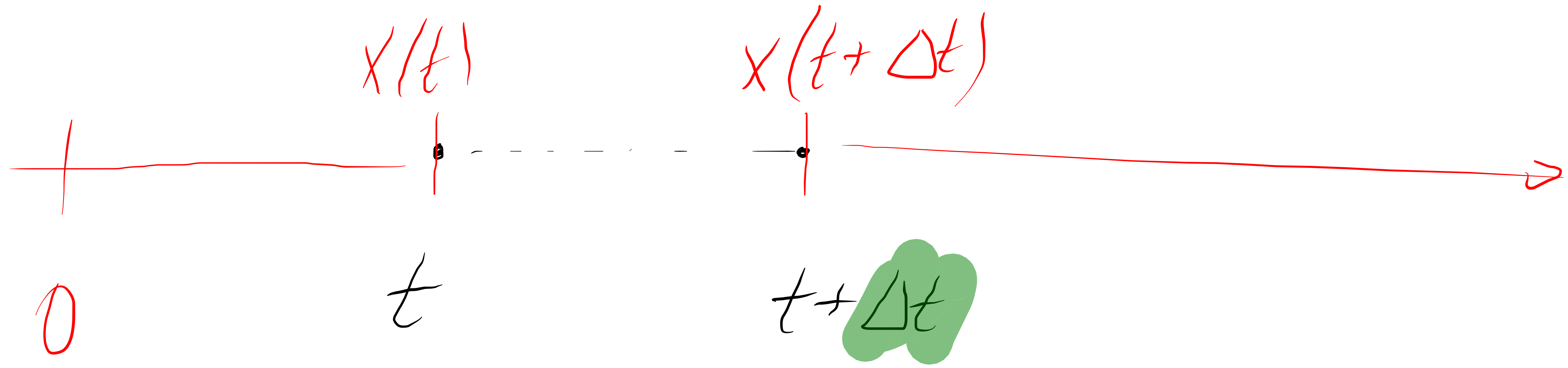
$$v = \frac{3}{\left(\frac{1}{6}\right)} = 18 \text{ km/h}$$

VITESSE INSTANTANÉE

$\Delta t = 60\,s$

$\Delta t = 6\,s$

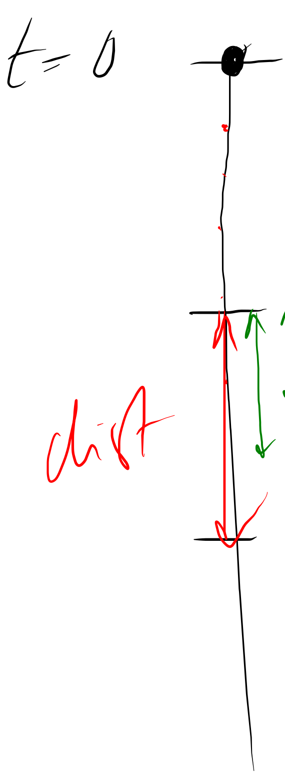
$\Delta t = 0{,}6\,s$



$$\boxed{x(t+\Delta t) - x(t)}$$

Accroissement de la distance

$$v = \frac{x(t+\Delta t) - x(t)}{\Delta t}$$



$$x(t) = 5t^2$$

$$\Delta t \to 0$$

$$x(t+\Delta t) = 5(t+\Delta t)^2$$

$$= 5(t^2 + 2\cdot t\cdot \Delta t + \Delta t^2)$$

$$= 5t^2 + 10t\,\Delta t + 5\Delta t^2$$

$$\frac{x(t+\Delta t) - x(t)}{\Delta t} = \frac{\cancel{5t^2} + 10t\,\Delta t + 5\Delta t^2 \cancel{- 5t^2}}{\Delta t}$$

$$= \frac{\cancel{\Delta t}(10t + 5\Delta t)}{\cancel{\Delta t}}$$

$$= \boxed{10t + 5\Delta t}$$

$$\lim_{\Delta t \to 0} (10t + 5\Delta t) = 10t = v(t)$$

$$\frac{f(x+\Delta x) - f(x)}{\Delta x} \xrightarrow[\Delta x \to 0]{} \boxed{2.8.1}$$

$$Q(t) = Q_0 \cdot a^t \qquad Q(1940) = Q_0 \cdot a$$

$$\frac{Q(1940)}{Q_0} = 0{,}17$$

$$\frac{1}{2}\cancel{Q_0} = \cancel{Q_0} \cdot a^{5700}$$

$$a = \sqrt[5700]{0{,}5} \simeq 0{,}999\,878\,403$$

$$\log_a 0{,}17 = t$$

$$\frac{Q(t)}{Q_0} = \boxed{a^t = 0{,}17}$$

$$\frac{\ln 0{,}17}{\ln a} \simeq 14572$$

$$a \simeq 0{,}999878403$$

$$Q(t) = Q_0 \cdot 2^t$$

$$\Leftrightarrow \frac{Q(t)}{Q_0} = 2^t$$