

Résoluti: $\hat{a} t = t_f$: $0 = a \cdot t_f + 27,8$ (1)
 $100 = \frac{1}{2} \cdot a \cdot t_f^2 + 27,8 \cdot t_f$ (2)

(1): $-27,8 = a \cdot t_f$

$$a = \frac{-27,8}{t_f} \quad (3)$$

(2): $100 = \frac{1}{2} \cdot \frac{(-27,8)}{t_f} \cdot t_f^2 + 27,8 \cdot t_f$

$$100 = \frac{(-27,8) \cdot t_f}{2 \cdot t_f} + 27,8 \cdot t_f$$

$$100 = t_f \cdot \left(27,8 - \frac{27,8}{2} \right)$$

$$100 = t_f \cdot \frac{27,8}{2}$$

$$\frac{2 \cdot 100}{27,8} = t_f \approx 7,19 \text{ s}$$

(3): $\left[a = \frac{-27,8}{7,19} \approx -3,87 \text{ m/s}^2 \right]$

$$\frac{a \cdot b}{c} \cdot \frac{d}{e} = f$$

$$\frac{\textcircled{a} b d}{c e} = \frac{f}{1}$$

$$\frac{5}{\frac{1}{2}} = \frac{5 \cdot 2}{1}$$

$$a = \frac{f c e}{b d}$$

$$\textcircled{P} = \frac{F}{\textcircled{S}}$$

$$p \cdot S = F$$

$$S = \frac{F}{p}$$

$$100 = \frac{a}{2} \cdot t + t$$

~~$$200 = at + t$$~~

$$100 = \frac{1 \cdot a \cdot t}{2} + \frac{2}{2} \cdot t$$

$$100 = \frac{1 \cdot a \cdot t + 2 \cdot t}{2}$$

$$100 = \frac{1}{2} \cdot (at + 2t)$$

$$a = \frac{b}{2}$$

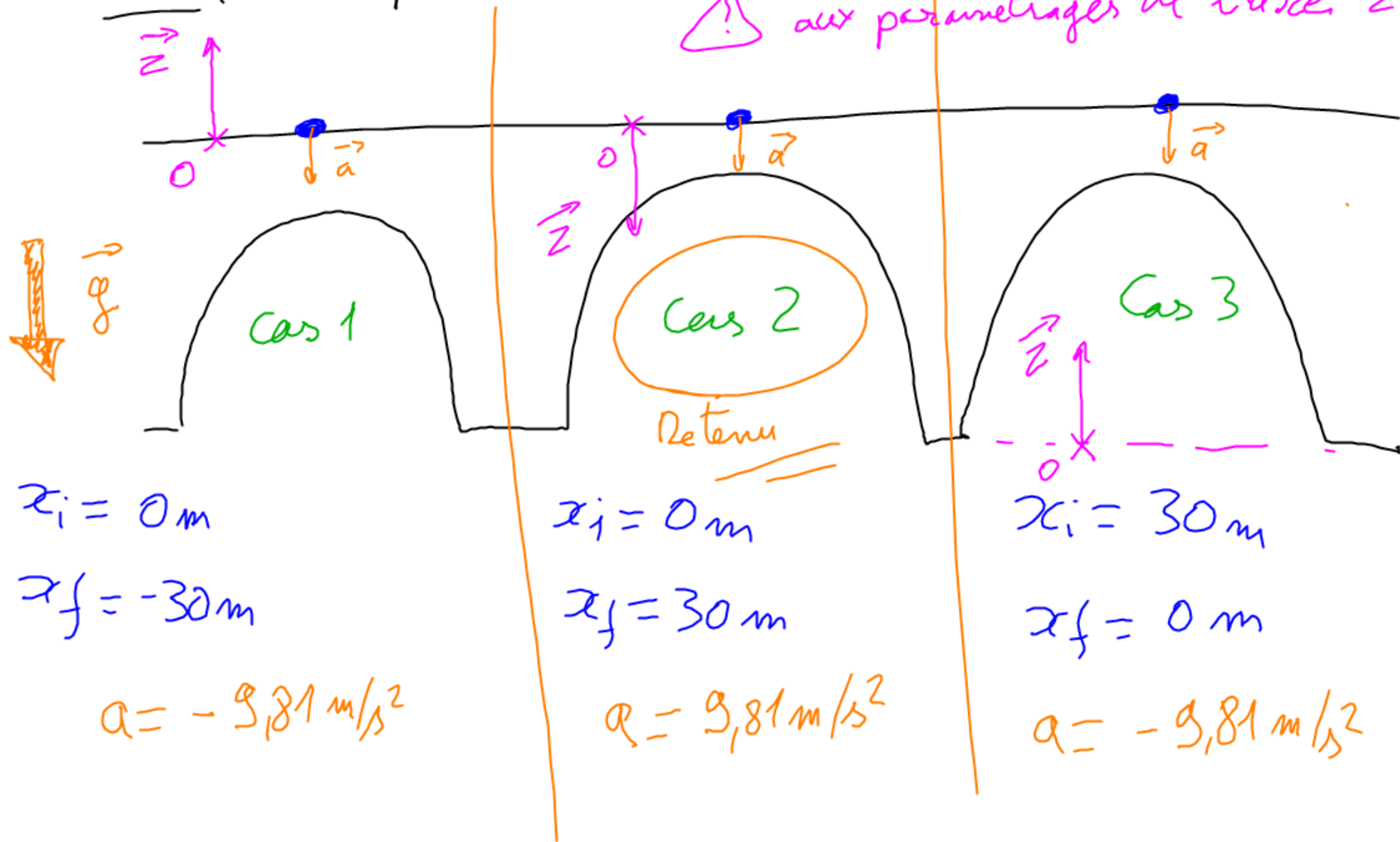
$$a = \frac{1}{2} \cdot b$$

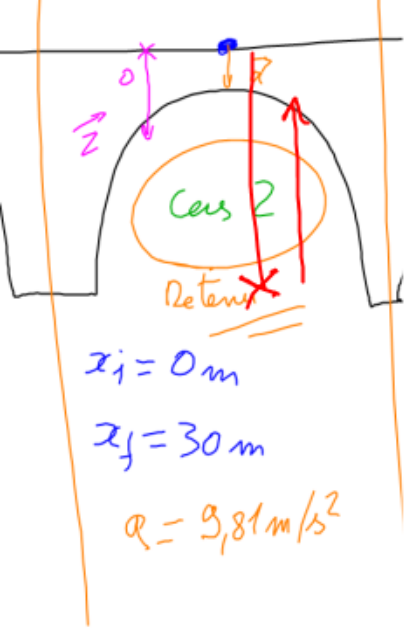
$$2a = 1 \cdot b$$

$$2a = b$$

ex5: Une pierre tombe d'un pont de 30m de hauteur.  aux paramétrages de classe $\vec{z}$

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$$t_i = 0\text{s} : x_i = 0\text{m}$$

$$t_f = : x_f = 30\text{m}$$

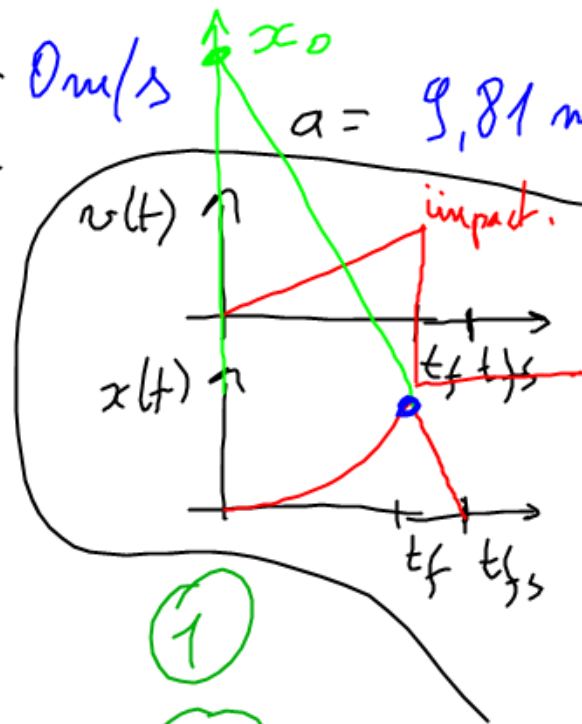
$$v_i = 0\text{m/s}$$

$$v_f =$$

$$a = 9,81\text{m/s}^2$$

$$\text{Eq. movt : } v(t) = 9,81 \cdot t$$

$$x(t) = \frac{1}{2} \cdot 9,81 t^2$$



$$\text{At } t = t_f : v_f = 9,81 \cdot t_f$$

$$30 = \frac{1}{2} \cdot 9,81 t_f^2$$

$$\textcircled{2} : \boxed{t_f = \sqrt{\frac{30 \cdot 2}{9,81}} \approx 2,47\text{s}}$$

$$\textcircled{1} : \boxed{v_f = 9,81 \cdot 2,47 \approx 24,3\text{m/s} \approx 87,3\text{km/h}}$$

Rebours sonore: $t_f = 2,47\text{s} : x_f = 30\text{m}$
 $t_{fs} = : x_{fs} = 0\text{m}$

$v_{\text{son}} = -340\text{ m/s}$ 6/6

< 0 , voir
paramétrages
de l'axe $\vec{z}$

Eq de movt : $x(t) = -340t + x_0$
(MRU)

à $t = t_{fs} : 0 = -340t_{fs} + x_0$

à $t_f = 2,47 :$ $30 = -340 \cdot 2,47 + x_0$

$t_{fs} = \frac{870}{340} \approx 2,56\text{s}$

$x_0 = 30 + 340 \cdot 2,47$
 $\approx 870\text{ m}$

$t_{\text{son}} = t_{fs} - t_f \approx 0,09\text{s}$

