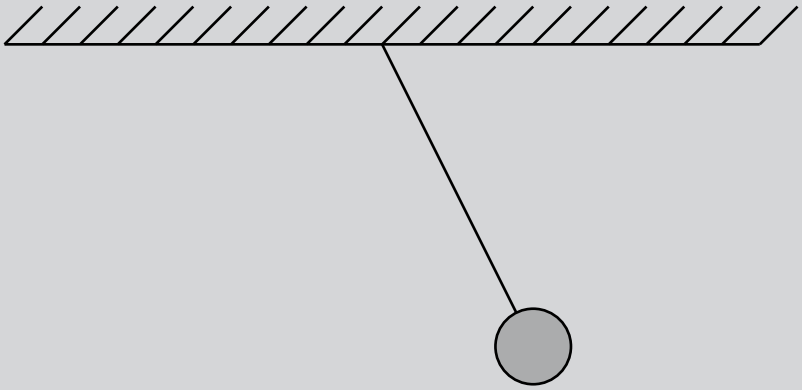
Activité : pendule

On va étudier le mouvement d'un pendule, sans frottements.



On admet les formules suivantes :

- $\cos(a+b) = \cos(a) \times \cos(b) - \sin(a) \times \sin(b)$
- $\lim_{h \to 0} \dfrac{\cos(h)}{h} = 0$
- $\lim_{h \to 0} \dfrac{\sin(h)}{h} = 1$

Si $f(x) = \cos(x)$,

$$\begin{aligned} f'(x) &= \lim_{h \to 0} \frac{\cos(x+h) - \cos(x)}{h} \\ &= \lim_{h \to 0} \frac{\cos(x)\cos(h) - \sin(x)\sin(h) - \cos(x)}{h} \end{aligned}$$