Équations à connaître

$$f = \frac{1}{T}$$

$$\omega = 2\pi f = \frac{2\pi}{T}$$

$$x(t) = A\cos(\omega t + \phi)$$

$$v(t) = -\omega A\sin(\omega t + \phi)$$

$$a(t) = -\omega^2 A\cos(\omega t + \phi)$$

$$v = \lambda f$$

$$y(x,t) = A\sin(kx \mp \omega t + \phi)$$

$$\frac{\Delta r}{\lambda} = \frac{\Delta\Phi}{2\pi}$$

Équation à connaître parce qu'on est au cégep ou parce qu'on a réussi des cours préalables :

$$\vec{F} = m\vec{a}$$

$$K = \tfrac{1}{2}mv^2$$

$$T_K = T_C + 273$$

Équations fournies

$$t_{sommet} = -\frac{\phi}{\omega}$$

$$a = -\omega^2 x$$

$$\omega = \sqrt{\frac{k}{m}}$$

$$U_{él} = \tfrac{1}{2}kx^2$$

$$E = \tfrac{1}{2}kA^2$$

$$s = \theta L$$

$$v_t = v_\theta L$$

$$\omega = \sqrt{\frac{g}{L}}$$

$$k = \frac{2\pi}{\lambda}$$

$$v = \frac{\omega}{k}$$

$$v = \sqrt{\frac{F}{\mu}}$$

$$P_{moy} = \tfrac{1}{2}\mu v\omega^2 A^2$$

$$\Delta\Phi = \phi_2 - \phi_1$$

$$\Delta\phi = 2m\pi$$

$$A_{rés} = \left|2A\cos\left(\frac{\Delta\Phi}{2}\right)\right|$$

$$y(x,t) = [2A\sin(kx)]\cos(\omega t)$$

$$v \approx 20{,}05\sqrt{T_K}$$

$$I = \frac{P}{A}$$

$$I = \frac{P_S}{4\pi r^2}$$

$$\beta = 10\log\left(\frac{I}{I_0}\right)$$

$$\Delta r = r_2 - r_1$$

$$\Delta r = m\lambda$$

$$f_{bat} = |f_1 - f_2|$$

$$f_{(2n-1)} = (2n-1)\frac{v}{4L}$$

$$f_n = \frac{nv}{2L}$$

$$f' = \left(\frac{v \pm v_O}{v \pm v_S}\right)f$$

$$\sin\theta = \frac{v_{son}}{v_{source}}$$

Constantes fournies

$$g = 9{,}81\ \tfrac{\mathrm{m}}{\mathrm{s}^2}$$

$$I_0 = 10^{-12}\ \tfrac{\mathrm{W}}{\mathrm{m}^2}$$

$$v_{son} = 340\ \tfrac{\mathrm{m}}{\mathrm{s}}$$

Équations optionnelles ou non essentielles

$$\frac{\Delta t}{T} = \frac{\Delta\Phi}{2\pi}$$

$$v_{max} = \pm\omega A$$

$$a_{max} = \pm\omega^2 A$$

$$T = \frac{2\pi}{\omega} = 2\pi\sqrt{\frac{m}{k}}$$

$$T = 2\pi\sqrt{\frac{L}{g}}$$

$$\theta(t) = \theta_{max}\cos(\omega t + \phi)$$

$$v_\theta(t) = -\omega\theta_{max}\sin(\omega t + \phi)$$

$$v_y(x,t) = \mp\omega A\cos(kx \mp \omega t + \phi)$$

$$\frac{d}{\lambda} = \frac{\Delta\Phi}{2\pi}$$

$$\mu = \frac{m}{L}$$

$$y'(x,t) = \sum_{i=1}^{n} y_i(x,t)$$

$$\lambda_n = \frac{2L}{n}$$

$$f_n = \frac{nv}{2L}$$

$$s = A\sin(kx - \omega t + \phi)$$