Superpostion of two harmonic oscillations with nearly the same frequency
$\rightarrow$ Resulting effect are sound beats
$\rightarrow$ the intensity of sound is modulated
$x(t)$ = displacemnet
$x_1(t) = \hat{X}_1 cos\omega_1 t$
$x_2(t) = \hat{X}_2 cos\omega_2 t$
$x(t) = x_1(t)+x_2(t) = \hat{X}(cos\omega_1 t+cos\omega_2 t) = 2\hat{X}\left[cos\frac{1}{2}(\omega_1-\omega_2)t\right]\left[cos\frac{1}{2}(\omega_1+\omega_2)t\right]$
$\rightarrow$ Approximation: if $\omega_1 \approx \omega_2$, then $\omega \approx \frac{\omega_1+\omega_2}{2}$ and $\Delta\omega \approx 0$
$\rightarrow x(t) = \left[2\hat{X}cos\frac{\Delta\omega}{2}t\right][cos\omega t]$, with $2\hat{X}cos\frac{\Delta\omega}{2}t$ is called modulated amplitude, and $cos\omega t$ is called basic oscillation.
¡on books.... lissajou figure ¿
Fourier Coeeficients
$a_0 = \frac{1}{T}\int_0^T f(t)dt$
$a_n = \frac{2}{T}\int_0^T f(t)cos(n\omega t)dt$
$b_n = \frac{2}{T}\int_0^T f(t)sin(n\omega t)dt$