sine series

$$\sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi}{2}x\right)$$

$$= \frac{1}{10}\sin(2\pi x)$$

$$\Rightarrow b_4 = \frac{1}{10}$$

$$b_n = 0 \quad n \neq 4$$

Lowest freq: $n = 1$ ⇒

fundamental freq $= \frac{1}{2L}\sqrt{\frac{T}{\rho}}$

All other freqs are const. multiples of fundamental.

high $\mathcal{D}$: 525 Hz

$\frac{2}{3}L$: 827. close to $877 = \frac{3}{2}\cdot 585$

low $\flat$: $292 \approx \frac{1}{2}\cdot 585$

Music & vibrating strings.

$$y(x,t) = \sum_{n=1}^{\infty} A_n \cos\left(\frac{n\pi}{L}vt\right)\sin\left(\frac{n\pi}{L}x\right)$$

fix x: solution: sum of trig fcts w/ frequencies

$$\nu_n = \frac{1}{2\pi}\frac{n\pi}{L}v = \frac{n}{2L}\sqrt{\frac{T}{\rho}}$$

tension

density