

$$1c) \int_{-\infty}^{\infty} \delta(x) F(x) dx = F(0) \quad (\text{FILM version})$$

$$\int_{-L}^L \delta(x) F(x) dx = \int_{-L}^L F(x) \cdot \left[\frac{1}{2L} + \frac{1}{L} \sum_{m=1}^{\infty} \cos\left(\frac{m\pi x}{L}\right) \right] dx$$

$$\underbrace{\frac{1}{2L} \int_{-L}^L F(x) dx}_{a_0} + \frac{1}{L} \sum_{m=1}^{\infty} \underbrace{\int_{-L}^L F(x) \cos\left(\frac{m\pi x}{L}\right) dx}_{a_m}$$

or \vec{a}_n ,

↙ Fourier?

$$\int_{-L}^L \delta(x) F(x) dx = \frac{a_0}{2} + \sum_{n=1}^{\infty} a_n = F(0)$$