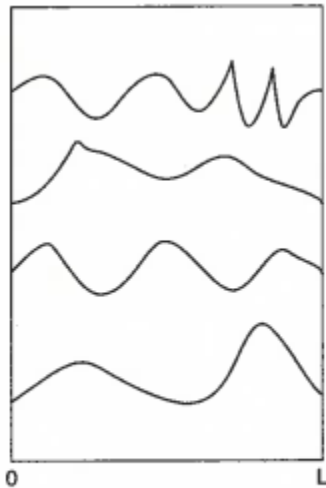


# Hilbert Space

Phys 401

# Shapes of a String of Length $L$ Fixed at Both Ends

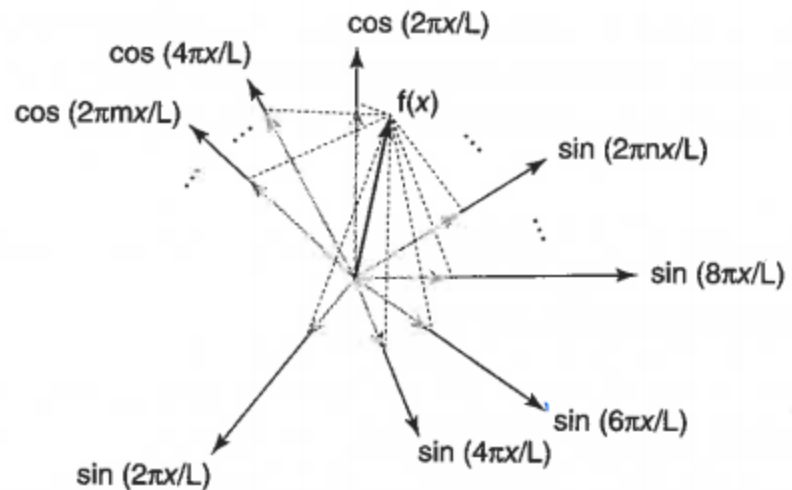


**Figure 2.6** Each shape of a string can be regarded as a *point* in a Hilbert space

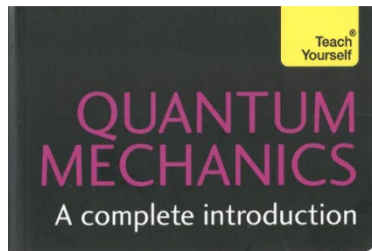
Fourier Series Representation:

$$f(x) = \sum_{n=0}^{\infty} A_n \cos \frac{2\pi n}{L} x + \sum_{n=1}^{\infty} B_n \sin \frac{2\pi n}{L} x$$

Hilbert Space Representation:



**Figure 2.7** A Hilbert space of functions, which can be expanded in Fourier series



- Understand quantum mechanics faster
- Master the subject step by step
- Test your knowledge to help you succeed

