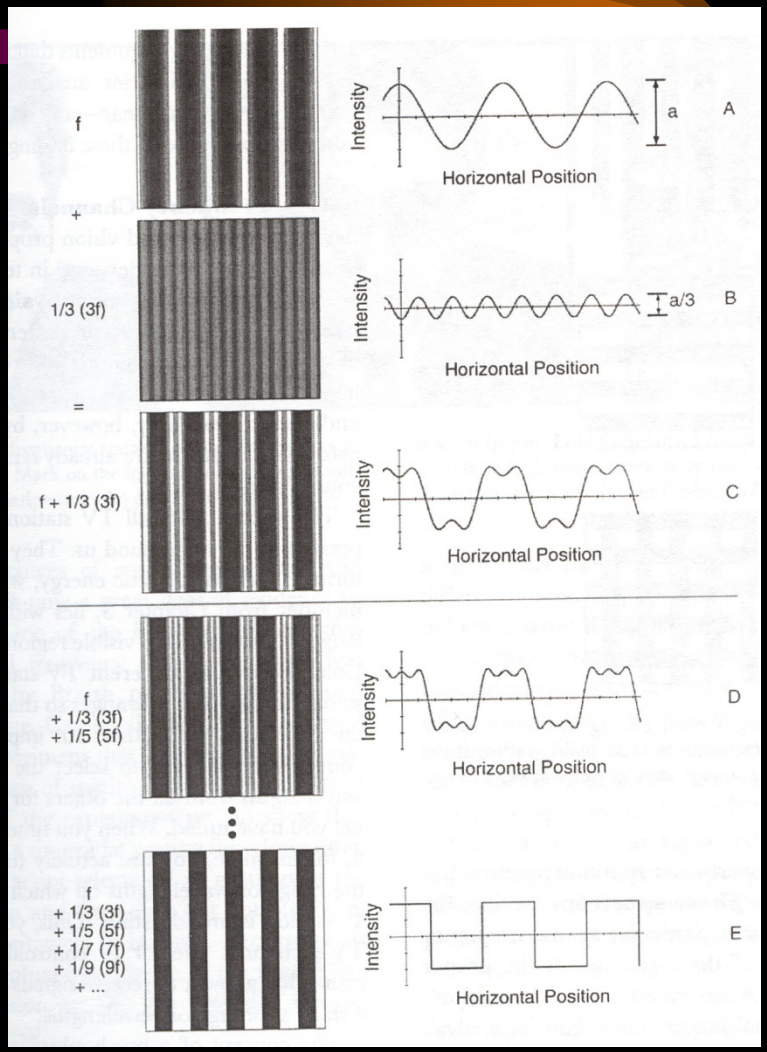
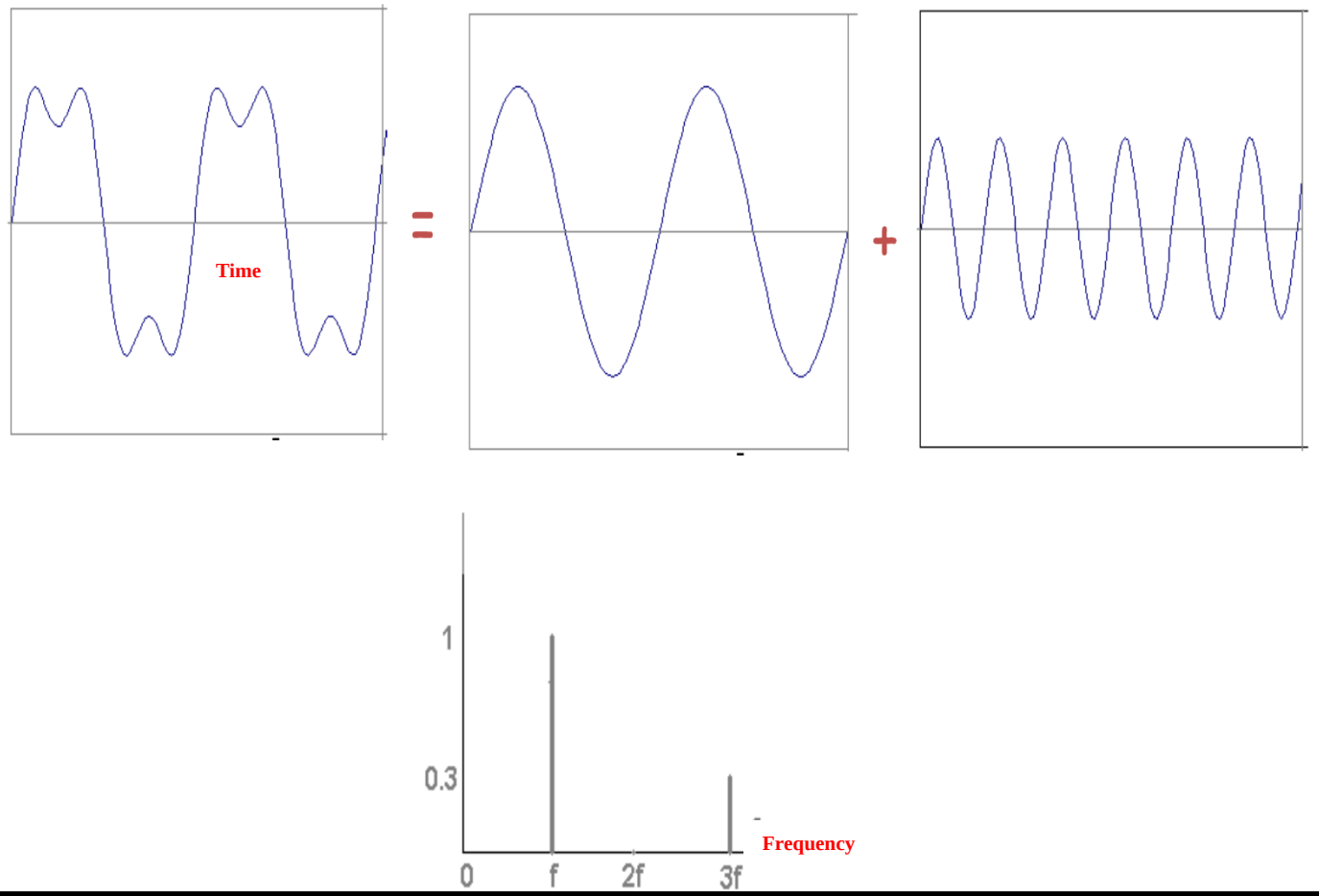
Fourier Transform

- Any image can be expressed as a linear combination of a bunch of sine gratings of different *frequency* and *orientation*
  - Amplitude
  - Phase

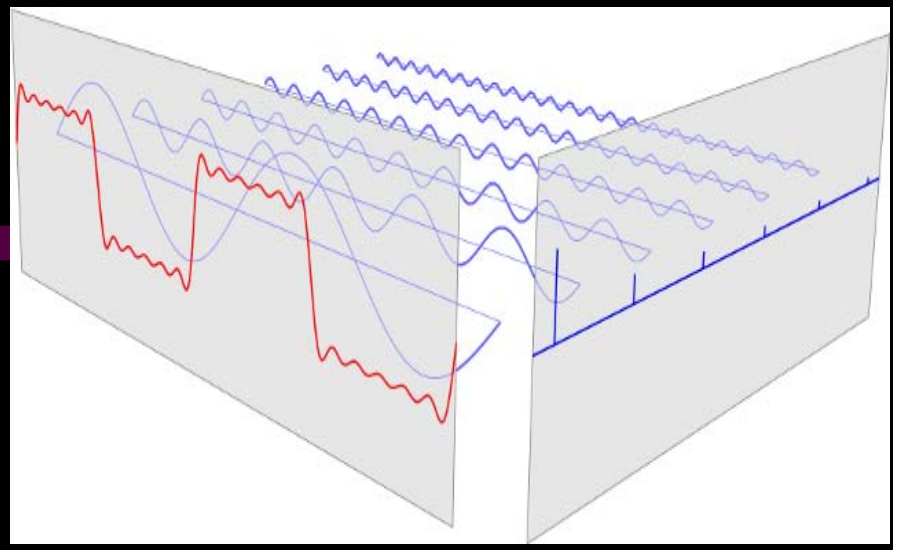


Fourier Transform in 1D

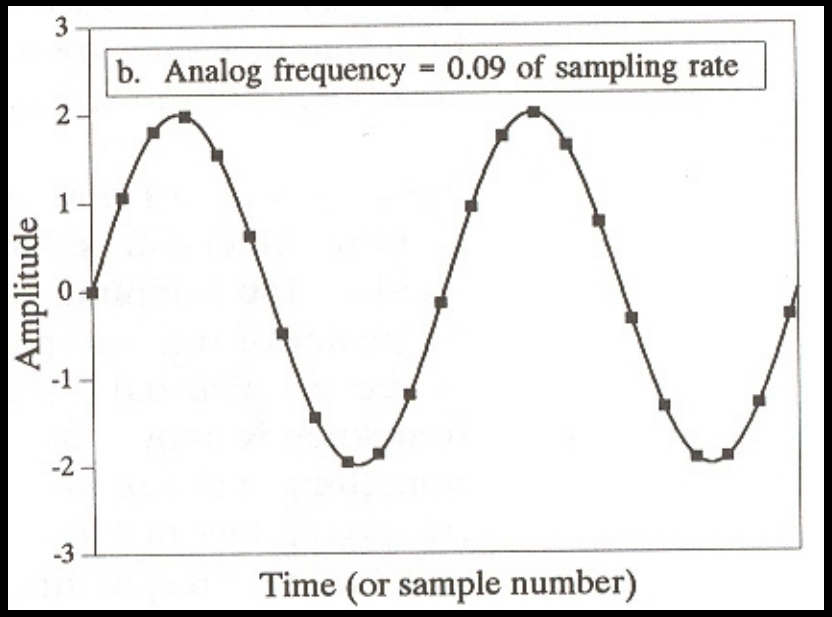
- example : $g(t) = \sin(2\pi f\, t) + (1/3)\sin(2\pi(3f)\, t)$



Fourier Transform in 1D

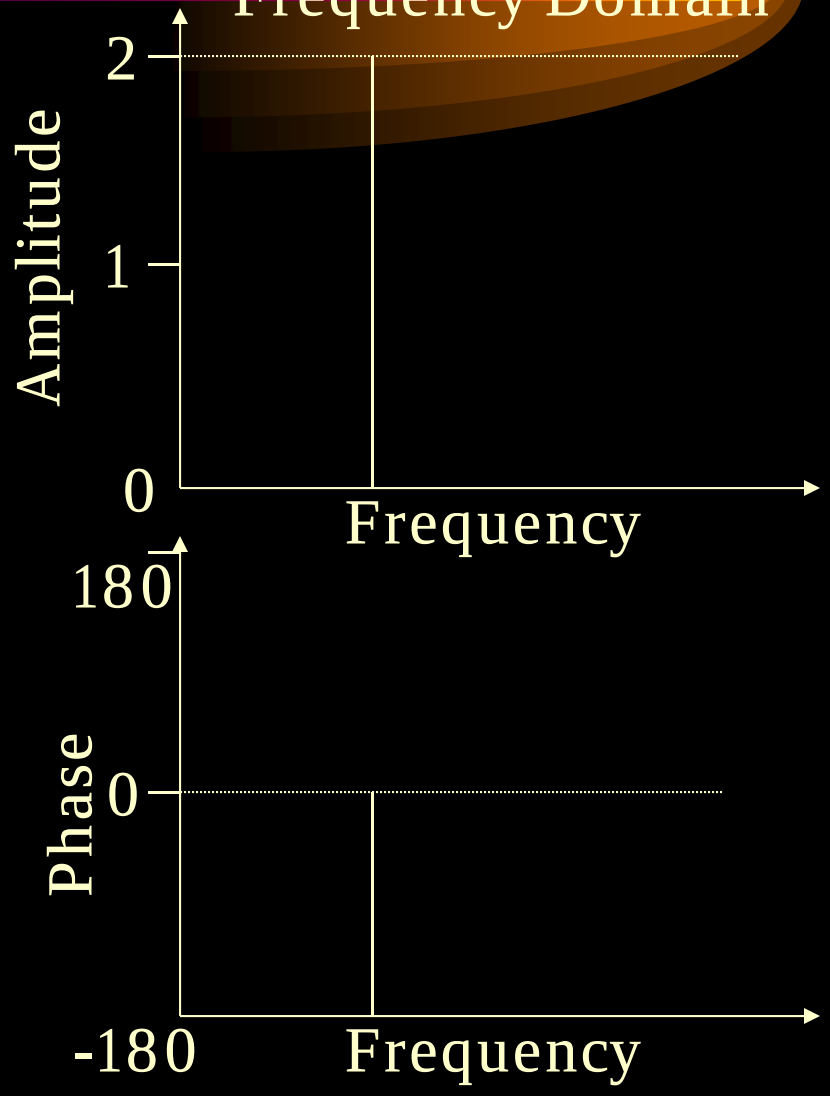


Representation in Both Domains

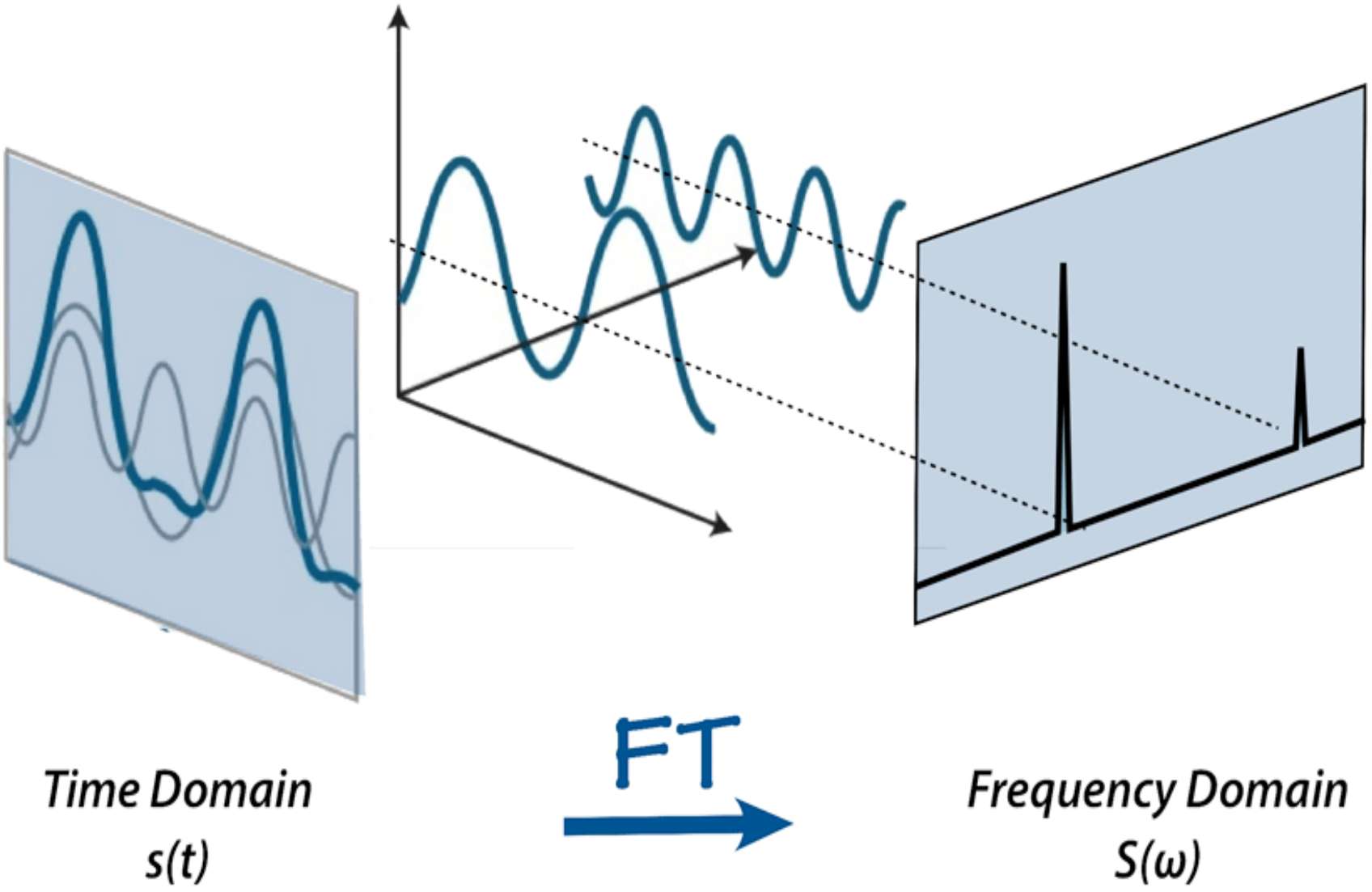


Time Domain

Frequency Domain



Fourier Transform in 1D



Images

- Images representing sine waves
  - Frequency
  - Orientation
  - Amplitude
  - Phase