Properties of Fourier Transforms (know how to derive these)

Linearity: $a f_1(t) + b f_2(t) \xrightarrow{\mathcal{F}} a F_1(\omega) + b F_2(\omega)$

Convolution: $f_1(t) * f_2(t) \xrightarrow{\mathcal{F}} F_1(\omega) F_2(\omega)$

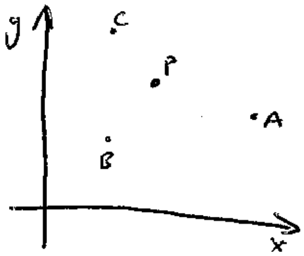
Scaling: $f(at) \xrightarrow{\mathcal{F}} \frac{1}{|a|} F\left(\frac{\omega}{a}\right)$

Time reversal: $f(-t) \xrightarrow{\mathcal{F}} F(-\omega)$

Time shift: $f(t-a) \xrightarrow{\mathcal{F}} e^{-j\omega a} F(\omega)$

Modulation: $f(t) e^{j\omega_0 t} \xrightarrow{\mathcal{F}} F(\omega - \omega_0)$

Image Comparison



To test against point a:

$$\|p-a\|_2 = \sqrt{(p_x-a_x)^2+(p_y-a_y)^2}$$

vectors are sized k

n-norm

$$\|p-a\|_n = \sqrt[n]{\sum_{i=1}^{k} (p_i-a_i)^n}$$

not the size of the vector!

$$\|p-a\|_1 = |p_x-a_x| + |p_y-a_y|$$

- You can think of $m \times n$ images as an $m \times n$-dimensional space
- You can apply these kinds of norms