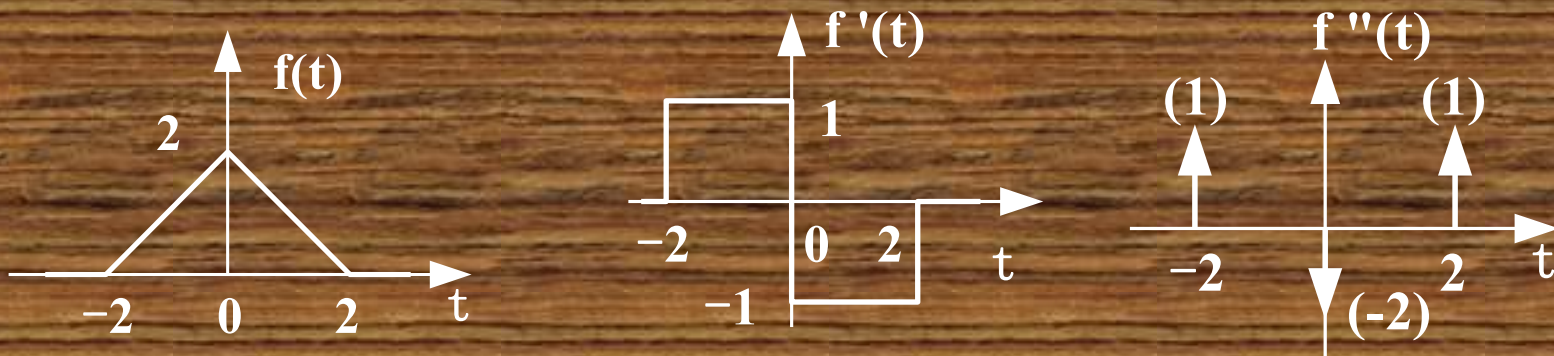求 $f(t) \longleftrightarrow F(j\omega)$

解: $f''(t) = \delta(t+2) - 2\,\delta(t) + \delta(t-2)$ $\boxed{f(t-t_0) \longleftrightarrow e^{-j\omega t_0}\,F(j\omega)}$

$F_2(j\omega) = \mathbf{F}\,[f''(t)] = e^{j2\omega} - 2 + e^{-j2\omega} = 2\cos(2\omega) - 2$

$F(j\omega) = \dfrac{F_2(j\omega)}{(j\omega)^2} = \dfrac{2 - 2\cos(2\omega)}{\omega^2}$ $\displaystyle\int_{-\infty}^{t} f(x)\,dx \longleftrightarrow \pi\,F(0)\delta(\omega) + \dfrac{F(j\omega)}{j\omega}$

注意: $d\varepsilon(t)/dt = \delta(t) \longleftrightarrow 1$ $\varepsilon(t) \longleftarrow\!\!\times\!\!\longrightarrow 1/(j\omega)$

Summary:

If $f^{(n)}(t) \longleftrightarrow F_n(j\omega)$, **and**

$$f(-\infty) + f(\infty) = 0$$

then

$$f(t) \longleftrightarrow F(j\omega) = F_n(j\omega) / (j\omega)^n$$