EG-247

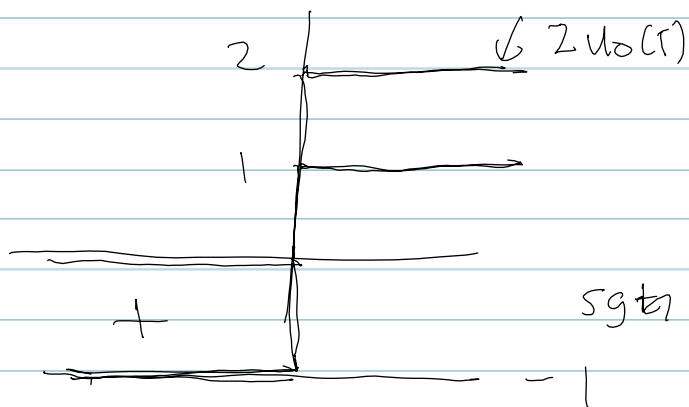## Second Fourier Transform

Example 1

$$\mathcal{F}\{u_0(t)\} = \pi\delta(\omega) + \frac{1}{j\omega}$$

$$\text{sign } t = 2u_0(t) - 1$$

$$u_0(t) = \frac{1}{2}\left[1 + \text{sign } t\right]$$

$$\text{sgn } t \iff \frac{2}{j\omega}$$

$$1 \iff 2\pi\delta(\omega)$$

$$\frac{1}{2}\left[2\pi\delta(\omega) + \frac{2}{j\omega}\right] = 2\pi\delta(\omega) + \frac{1}{j\omega}$$

QED