

Fourier Transform Exercises

① Sketch the Fourier transform of
 $g(t) = 12 \cos(2\pi \cdot 10^6 t)$.

② A signal has Fourier transform
 $G(\omega) = 6\pi \delta(\omega - 20\pi)$.

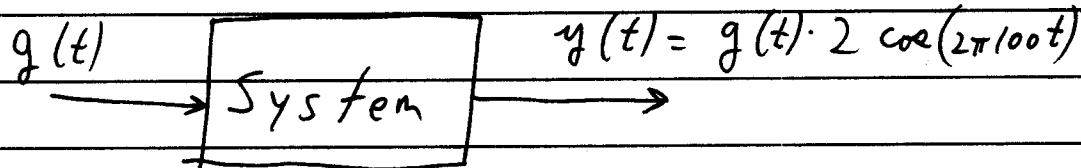
a) Sketch $G(\omega)$.

b) Find $g(t)$.

c) Is $g(t)$ real-valued?

Does $G(-\omega) = G^*(\omega)$?

③



$$G(\omega) = 3 \cdot \text{rect}\left(\frac{\omega}{80\pi}\right)$$

a) ~~Find~~ Sketch $G(\omega) = \mathcal{F}\{g(t)\}$

b) Find $Y(\omega) = \mathcal{F}\{y(t)\}$.

c) Is this system linear?

Is it time-invariant?