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

2. A signal has Fourier transform
   \[ G(w) = 6\pi \delta(w - 20\pi). \]
   a) Sketch \( G(w) \).
   b) Find \( g(t) \).
   c) Is \( g(t) \) real-valued? Does \( G(-w) = G^*(w) \)?

3. \[ q(t) \quad \text{System} \quad y(t) = q(t) \cdot 2 \cos(2\pi 10^6 t) \]
   \[ G(w) = 3 \cdot \text{rect} \left( \frac{w}{80\pi} \right) \]
   a) Sketch \( G(w) = \mathcal{F}\{q(t)\} \)
   b) Find \( Y(w) = \mathcal{F}\{y(t)\} \).
   c) Is this system linear?
   Is it time-invariant?