

Name: _____

Date: 4/1/2026

Mark: _____

Time: 10 Min.

1. Multiplication of two signals in the time domain corresponds to: $X(t) \cdot g(t)$

- a. Multiplication in frequency domain. ✗
- ☒ b. Convolution in frequency domain. ✓
- c. Differentiation in frequency domain. ✗
- d. Time shifting in frequency domain. ✗

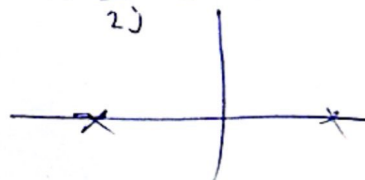
2. For an LTI system with impulse response $h(t)$, the output spectrum is:

- a. $Y(\omega) = X(\omega) + H(\omega)$
- ☒ b. $Y(\omega) = H(\omega)X(\omega)$
- c. $Y(\omega) = \frac{H(\omega)}{X(\omega)}$
- $Y(\omega) = H(\omega) * X(\omega)$

3. The frequency spectrum of $\sin(\omega_0 t + \pi/2)$ consists of: $\sin(\omega_0 t + \frac{\pi}{2}) =$

- a. One impulse at ω_0 . ✗
- ☒ b. Two impulses at $\pm\omega_0 + \pi/2$. ✓
- ☒ c. Two impulses at $\pm\omega_0$. ✓
- d. A sinc $(\omega_0 t)$ function. ✗

$$\frac{1}{2j} e^{j\frac{\omega_0 \pi}{2}} - \frac{1}{2j} e^{j\frac{\omega_0 \pi}{2}}$$



4. The spectrum magnitude at $\omega = 4$ in the $H(\omega) = \frac{3}{3-j\omega}$ is

- a. 1
- b. 9
- c. $1/\sqrt{2}$
- ☒ d. $3/5$ ✓

$$|H(\omega)| = \frac{3}{\sqrt{9+\omega^2}} = \frac{3}{\sqrt{25}} = \frac{3}{5}$$

Good Luck!