

Given the Bode plot from RW 19.3 part a,  
what is the output for an input

$$u(t) = 3 \sin(10t)$$

$$|H(j\omega)| = 10 \text{ dB}$$

$$\angle H(j\omega) = 45 \text{ deg} \quad \text{at} \quad \omega = 10 \text{ rad/s}$$

$$20 \log_{10} |H(j\omega)| = 10 \text{ dB}$$

$$\log_{10} |H(j\omega)| = \frac{10}{20} = 0.5$$

$$10^{\log_{10} |H(j\omega)|} = 10^{0.5}$$

$$|H(j\omega)| = 10^{0.5} = 3.16 \quad \checkmark$$

$$45 \text{ deg} \frac{\pi \text{ rad}}{180 \text{ deg}} = \frac{\pi}{4} \text{ rad}$$

$$y(t) = 3(3.16) \sin\left(10t + \frac{\pi}{4}\right)$$