

EE101 Lecture #27 May. 16, 2018

• Quiz 9 encore on Friday, March 16 at 2:40 PM.

• Final Exam on Tuesday, March 20, 4-9 PM

(ch 1-8) Study guide

- Ohm's Law
- KVL, KCL
- Mesh Analysis
- Nodal Analysis
- Thevenin's equiv. ckt
- Norton's equiv. ckt
- Max Power Transfer
- Calculation of Ref. Conf. Lef
- BJT circuit
- OP Amp circuit
- Ideal transformer (ch 13)
- First-order (RC, RL) circuits
- Second-order (RLC) circuits
- Frequency response (ch 14)
- Bode plot (ch 14)

Bode Plot of $H(s) = \frac{10(s+1)}{(s+2)(s+3)}$

$$H(j\omega) = \frac{10(j\omega+1)}{(j\omega+2)(j\omega+3)} = \frac{10(1+j\omega)}{2(1+\frac{j\omega}{2})(1+\frac{j\omega}{3})}$$

$$|H(j\omega)| = \frac{10}{6} \frac{|1+j\omega|}{|1+\frac{j\omega}{2}| |1+\frac{j\omega}{3}|}$$

$$20 \log_{10} |H(j\omega)| = \underbrace{20 \log_{10} \frac{10}{6}}_{+4.5} + 20 \log_{10} |1+j\omega| - 20 \log_{10} |1+\frac{j\omega}{2}| - 20 \log_{10} |1+\frac{j\omega}{3}|$$

Plot of $20 \log_{10} |1+j\omega| = B_1(\omega)$

ω	$B_1(\omega)$
0	0 dB
1	3 dB
10	20 dB

$20 \log_{10} \sqrt{1+10^2} \approx 20 \log_{10} 10 = 20 \text{ dB}$





