EE225 Network Theory

Tutorial Sheet

1.) Draw asymptotic bode plots for the following transfer functions. (both magnitude and phase plot)

$$\frac{1}{s(s+1)}, \quad \frac{1}{s-1}, \quad \frac{1}{1-s}, \quad \frac{s+5}{s^2(s+1)(s+10)}, \quad \frac{s+8}{(10s+8)(s+80)}$$

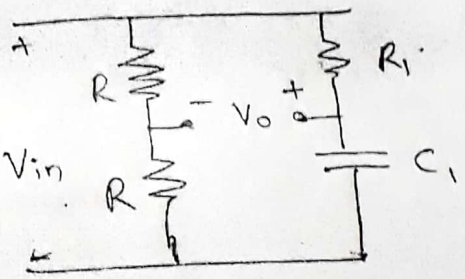
2.) Construct bode plots for the following functions.

$$\frac{2}{s^2\left(1+\frac{s}{2}\right)\left(1+\frac{s}{3}\right)}, \quad \frac{(s+10)(s+100)}{s^2(s+20)}$$

3.) Consider the given circuit.

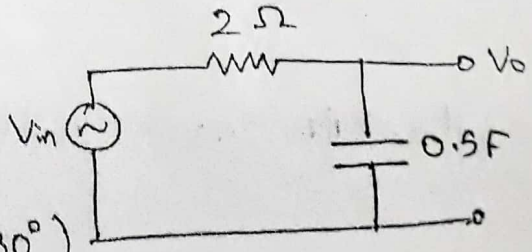
Find the transfer function and draw the bode plot.

for $R_1 = 1k\Omega$, $C_1 = 500\mu F$



4.) Find two different transfer functions that have the same magnitude plot. The transfer functions should have atleast a zero and it should be type 1. Compare the bode plots of the two.

5.) Consider the following circuit



a) Find the transfer function

b) Find Vo if $V_{in} = 10\sin(2\pi t + 30^\circ)$

c) Find the active power in the circuit.

Scanned by CamScanner