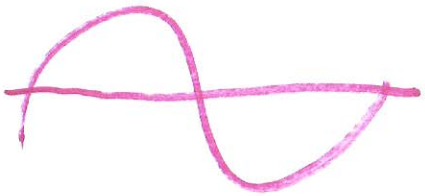
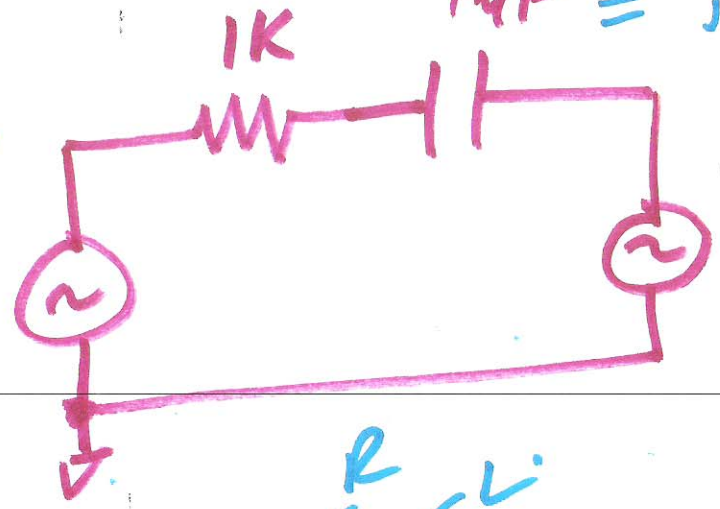
June 25, 2014

Lec. 8D

EE 220



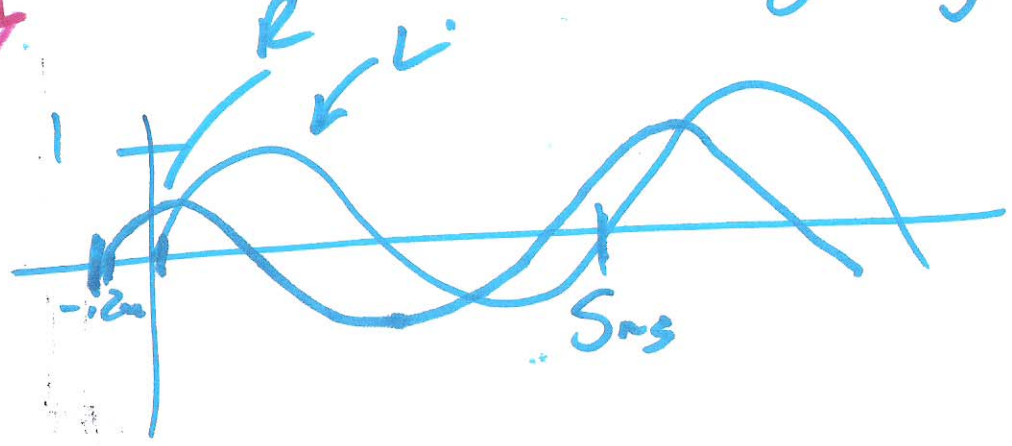
$$1\mu F = \frac{1}{j \cdot 2\pi \cdot 200 \cdot 10^{-6}} = -j796$$

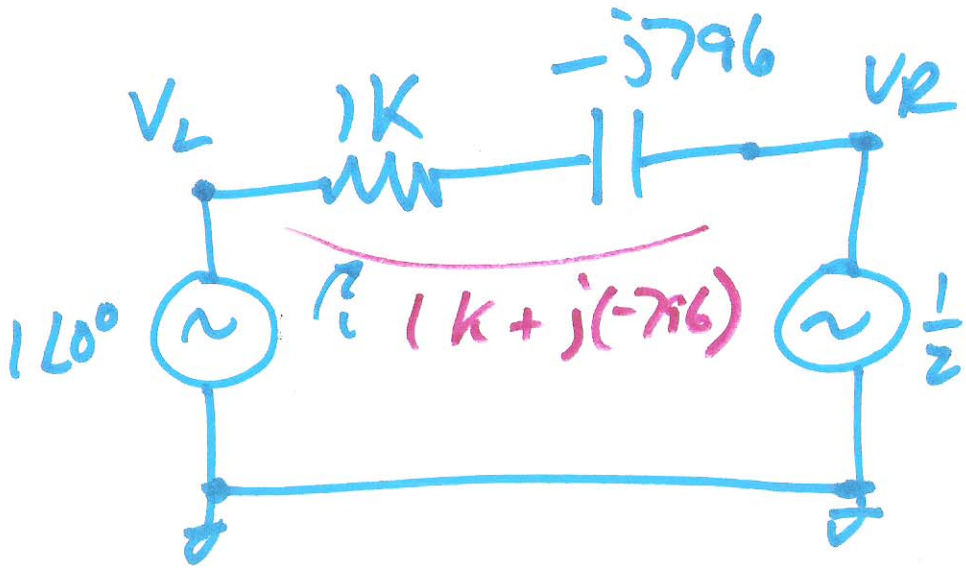


$$\frac{1}{2} \angle +28.8^\circ$$

$$\text{Sin}\left(0 \tfrac{1}{2} 200 - .8^{4}\text{ms}\right)$$

$$\theta = \frac{0.4}{5} \cdot 360 = 28.8$$





$V_L - V_R = .61\angle -23.21$

$= .562 + j(-.241)$

$\frac{1}{2}\cos 28.8 = Re$

$\frac{1}{2}\sin 28.8 = Im$

$V_L - V_R = 1\angle 0 - \frac{1}{2}\angle 28.8$

$-23.21 = \frac{t_d}{5ms}\,.360 = 1 + j0 - (.438 + j0.241)$

$.562 + j(-0.241)$

$\sqrt{(.562)^2 + (0.241)^2} = .61$

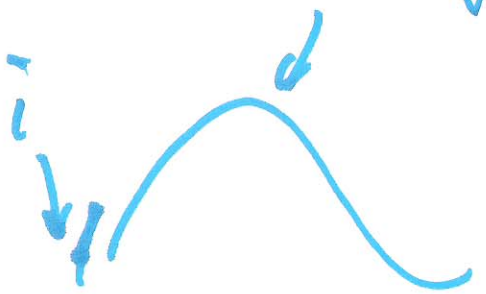
$\angle \tan^{-1}\frac{-.241}{.562} = \angle -23.21°$

$t_d = 0.32ms$

$$i = \frac{.61\angle -23.21}{1k + j(-796)}$$

$$\sqrt{(1k)^2 + (796)^2} = 1278$$

$$\angle \tan^{-1} \frac{-796}{1k} = -38.52^\circ$$



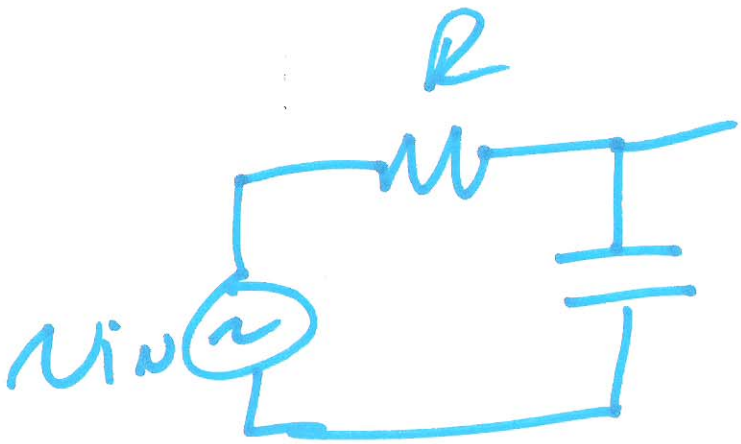
$$i = \frac{.61\angle -23.21}{1278\angle -38.52}$$

$$= \frac{.61}{1278}\angle -23.21 - (-38.52)$$

$$= 477\mu A \angle 15.31$$

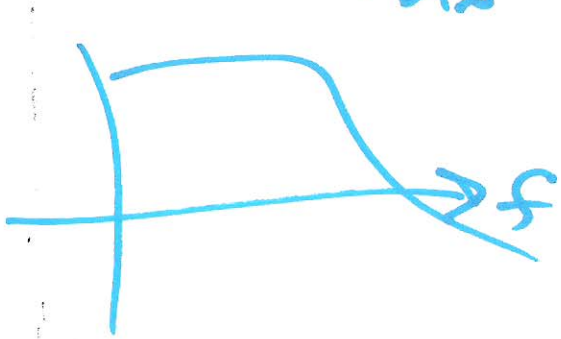
$$t_d = 5ms \cdot \frac{15.31}{360} = 0.21ms$$

3)



$$V_{out} = V_{in} \cdot \frac{\frac{1}{j\omega C}}{\frac{1}{j\omega C} + R}$$

$$\frac{V_{out}}{V_{in}} = \frac{1}{1 + j2\pi RC \cdot f}$$



transfer

freq. plots

AC Analysis