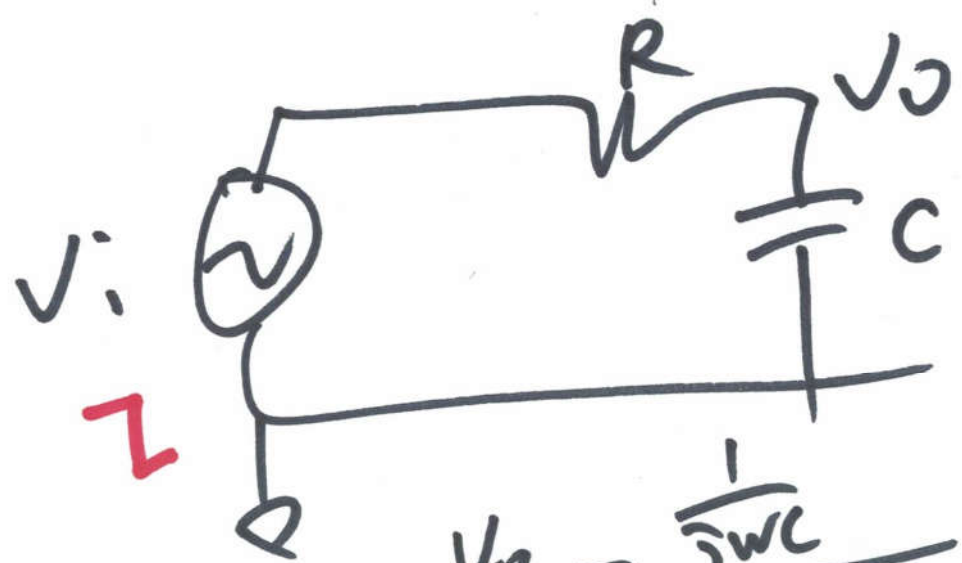


Lab 2  
Afternoon Time Delay of Sine wave



$$\frac{V_o}{V_i} = \frac{1}{j\omega C} \cdot \frac{1}{R + \frac{1}{j\omega C}} = \frac{1 + j\omega R C}{j\omega R C}$$

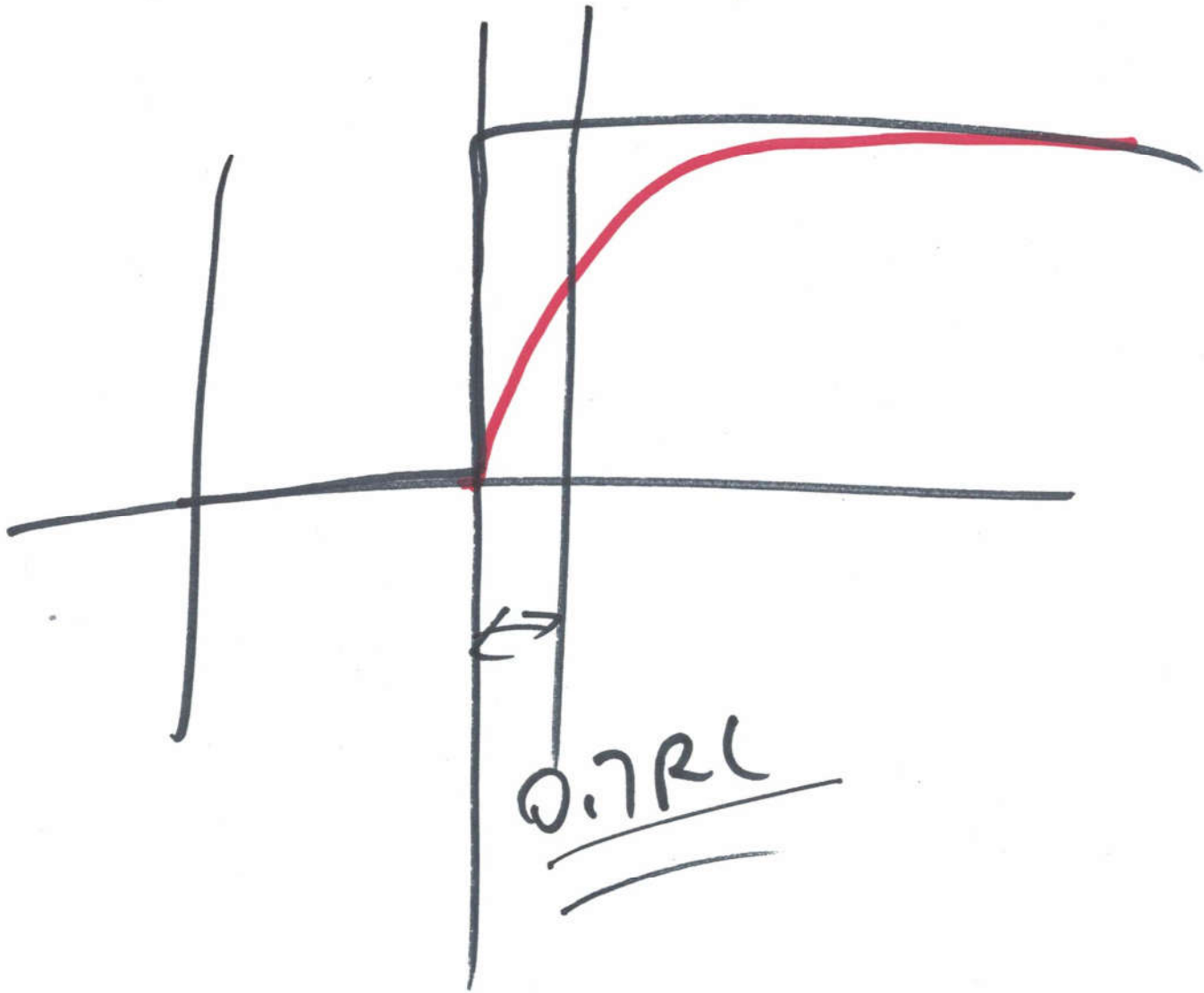
$$\left| \frac{V_o}{V_i} \right| = \frac{1}{\sqrt{1 + \omega^2 R^2 C^2}}$$

$$\Delta\theta = \angle V_o - \angle V_i = \tan^{-1} \frac{0}{1} - \tan^{-1} \frac{\omega R C}{1}$$

$$t_d = \frac{\Delta\theta}{360^\circ} \cdot T$$

$$T = \frac{1}{f}$$

①

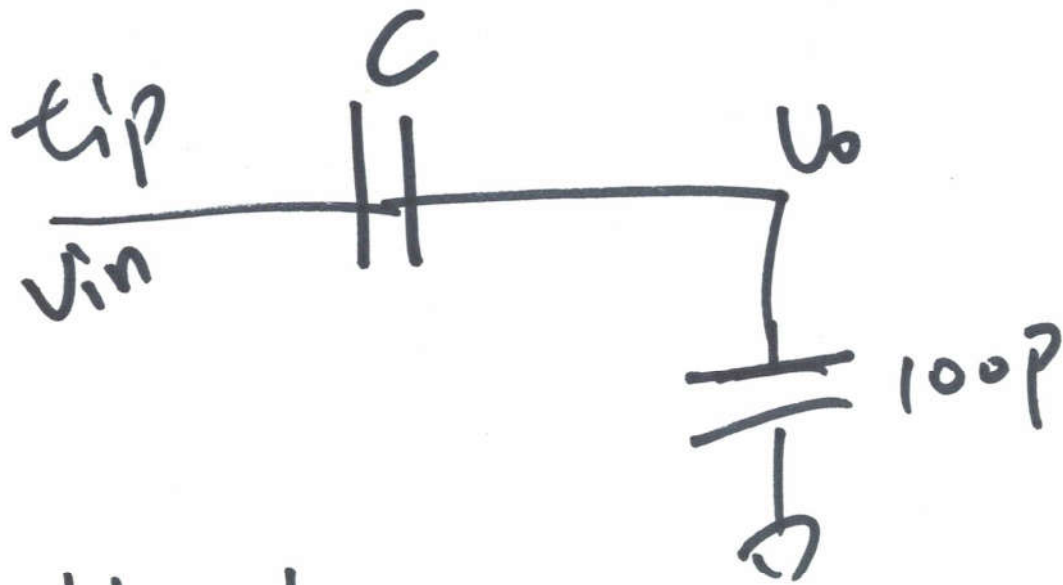


2



$$\frac{1}{10} = \frac{v_o}{v_i} = \frac{1\text{ MEG}}{R + 1\text{ MEG}} \Rightarrow R = 9\text{ MEG}$$

(3)



$$\frac{U_0}{v_i} = \frac{1}{10}$$

$$= \frac{1}{j\omega 100\text{p}}$$

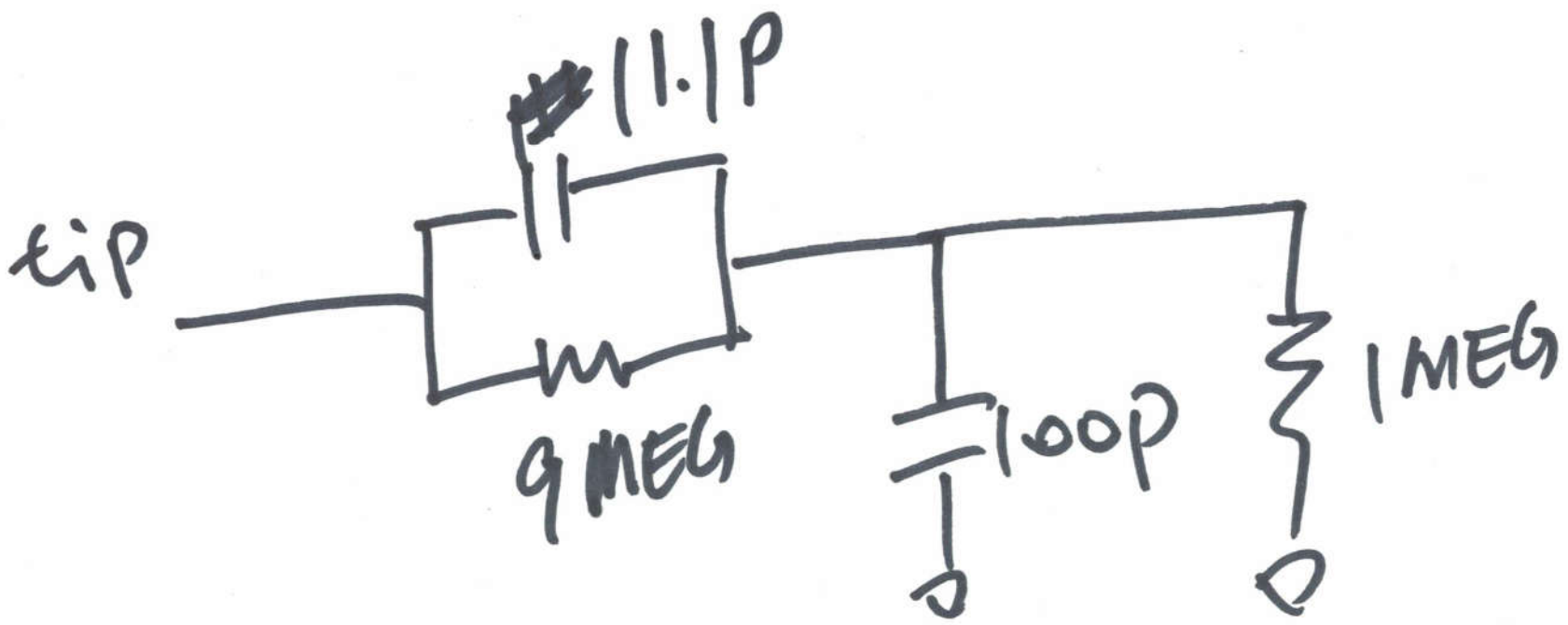
$$\frac{1}{j\omega C} + \frac{1}{j\omega 100\text{p}}$$

$$\Rightarrow 10C = 100\text{p} + C$$

$$9C = 100\text{p}$$

$$C = \frac{100\text{p}}{9} = 11.1\text{p}$$

(4)



5