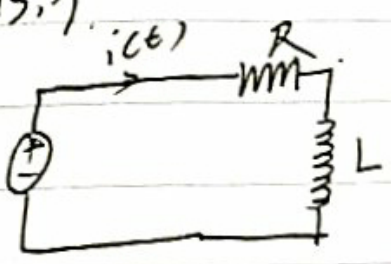
练习13.6

(a) (2)　　(b) (4)　　(c) (1)　　(d) (5)

练习13.9



$R = 10^3\ \Omega$.

$\omega = 10^7$ 时. $R^2 - \omega^2 L^2 = 10^4$.

$L = 10^{-3}\ H$.

练习13.11

(a) $|H(j\omega)| = \dfrac{\frac{1}{j\omega C}}{R + \frac{1}{j\omega C}} = \dfrac{1}{\omega C\sqrt{R^2 + \omega^2 C^2}}\, e^{-j\varphi}$

$\tan\varphi = \dfrac{R}{\omega C}$

$\angle H(j\omega) = \tan^{-1}\left(\dfrac{R}{\omega C}\right)$

(b) $|H(j\omega)| = \dfrac{j\omega L}{R + j\omega L} = \dfrac{\omega L}{\sqrt{\omega^2 L^2 + R^2}}\, e^{-j\varphi}$

$\angle H(j\omega) = \varphi = \tan^{-1}\left(-\dfrac{R}{\omega L}\right)$

(c) $|H(j\omega)| = \dfrac{R}{R + \frac{1}{j\omega C}} = \dfrac{R^2}{\sqrt{\omega^2 C^2 + R^2}}$

$\angle H(j\omega) = \tan^{-1}\left(-\dfrac{R}{\omega C}\right)$

(d) $|H(j\omega)| = \dfrac{R}{j\omega L + R} = \dfrac{R}{\sqrt{\omega^2 L^2 + R^2}}\, e^{-j\varphi}$

$\angle H(j\omega) = \tan^{-1}\left(\dfrac{\omega L}{R}\right)$

练习13.16

$$\frac{V_o(s)}{V_i(s)} = \frac{\frac{1}{j\omega C} \,/\!/\, (j\omega L + R_2)}{R_1 + \left[\frac{1}{j\omega C} \,/\!/\, (j\omega L + R_2)\right]} \cdot \frac{R_2}{j\omega L + R_2} \Omega$$

$$= \frac{R_2}{R_1 + R_2 + j\omega L + R_1 R_2 j\omega C - \omega^2 L}$$

$$\frac{I_A(s)}{V_i(s)} = \frac{\frac{1}{j\omega C} \,/\!/\, (j\omega L + R_2)}{R_1 + \left[\frac{1}{j\omega C} \,/\!/\, (j\omega L + R_2)\right]} \Big/ \frac{1}{j\omega C}$$

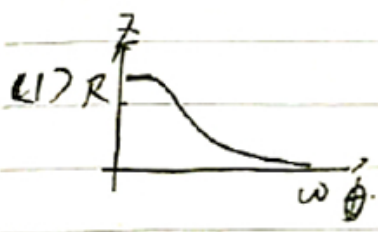
$$= \frac{j R_2 \omega C - \omega^2 C L}{R_1(1 - \omega^2 L + R_2 j\omega C) + j\omega L + R_2}$$

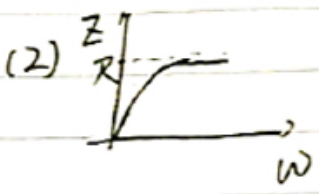
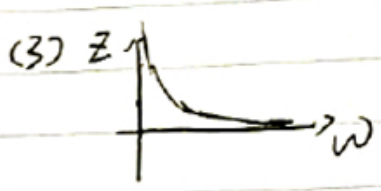
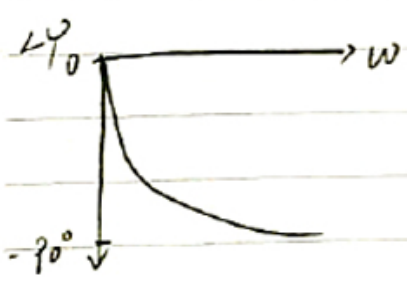
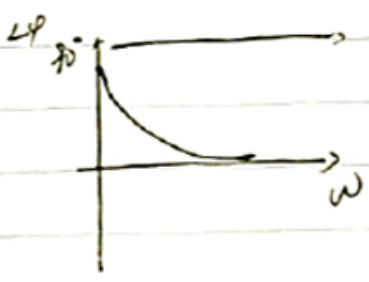
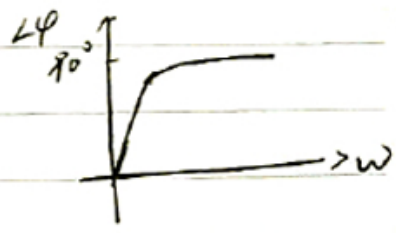
习题页13.1

(1) $Z_1 = \dfrac{R\left(\frac{1}{j\omega C}\right)}{R + \frac{1}{j\omega C}} = \dfrac{R - jR\omega C}{1 + \omega^2 C^2 R^2}$

(2) $Z_2 = \dfrac{1}{\frac{1}{R} + \frac{1}{j\omega L}} = \dfrac{\omega^2 L^2 R + j\omega L R^2}{\omega^2 L^2 + R^2}$

(3) $Z_3 = \dfrac{1}{\frac{1}{\frac{1}{j\omega C_1} + \frac{1}{j\omega C_2 + R}}} = \dfrac{1 + jR\omega C_2}{j(\omega C_1 + \omega C_2) - \omega^2 R C_1 C_2}$

(1) 

(2) 

(3)