

سک. ۰.۱

توابع شبکه:

$$e^{-t} u(t)$$

$$H(s) = \frac{1}{s+1}$$

$$x(t) = r u(t) \rightarrow \frac{r}{s}$$

$$(r - r e^{-t}) u(t)$$

$$Y(s) = \frac{r}{s} \times \frac{1}{s+1} = \frac{r}{s} + \frac{-r}{s+1}$$

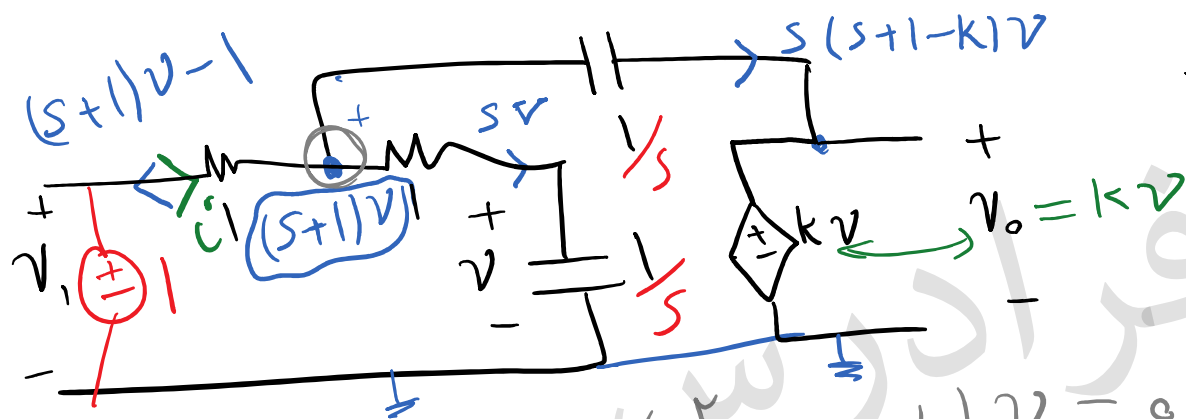
$$e^{-rt} u(t) \rightarrow \frac{1}{s+r} \Rightarrow$$

$$Y(s) = \frac{1}{(s+2)} \times \frac{1}{s+1} =$$

$$H(s) = \frac{Y(s)}{X(s)}$$

$Y(s)$ { پاسخ حالت-صفر }
 $X(s)$ { ورودی }

پاسخ مجزای $h(t)$



$$H(s) = \frac{V_o}{V_i}$$

$$H(s) = \frac{i}{V_i}$$

$$sV + (s+1)V - 1 + (s + s - sk)V = 0$$

$$V(s^2 + (2-k)s + 1) = 1 \Rightarrow V_o = H(s) = \frac{k}{s^2 + (2-k)s + 1}$$

$$Z = \frac{V}{i}$$

$$x_1(t) = \delta(t) \rightarrow y_1(t) = e^{-t} u(t) \rightarrow H(s) = \frac{1}{s+1}$$

سریال اول به هم

$$x_2(t) = 2u(t)$$

سریال دوم به هم

$$y_2(t) = 2(1 - e^{-t})u(t) + \Delta e^{-\tau t} u(t)$$

$$\frac{2}{s} \times \frac{1}{s+1} = \frac{2}{s} + \frac{-2}{s+1}$$

$$x_c(t) = 2e^{-\tau t} u(t)$$

$$y_c(t) = ?$$

$$2(1 - e^{-t})u(t)$$

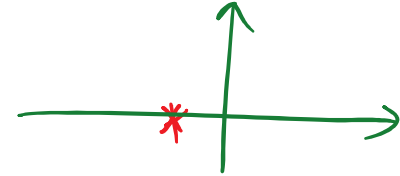
$$\frac{2}{(s+1)(s+3)} = \frac{1}{s+1} + \frac{-1}{s+3}$$

$$\Rightarrow (e^{-t} - e^{-3t})u(t)$$

$$H(s) = \frac{A(s)}{B(s)}$$

→ →

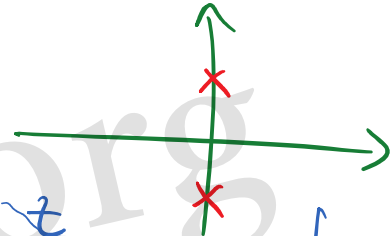
سفرهای
قطب



$$H(s) = \frac{k}{s^r + (r-k)s + 1}$$

$$s^r + rs + 1 = 0$$

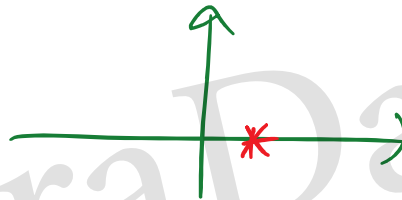
$$(s+1)^r = 0$$



t
 re

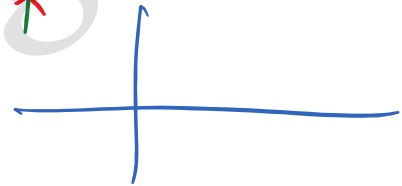
$$k=r$$

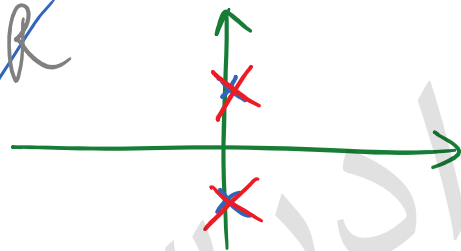
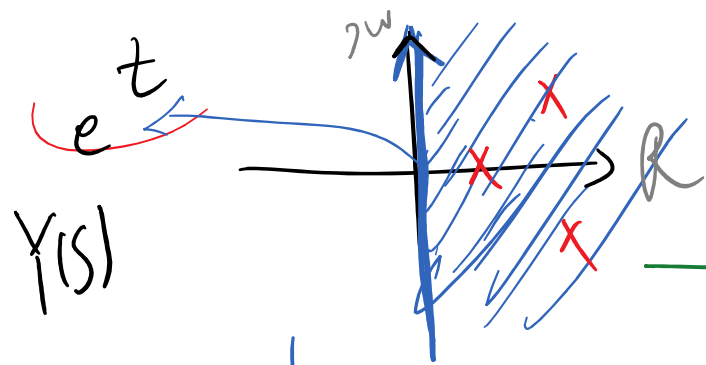
$$(s-1)^r = 0$$



$$k=r$$

$$ke^{-\frac{t}{\tau}}$$





باید مرزی

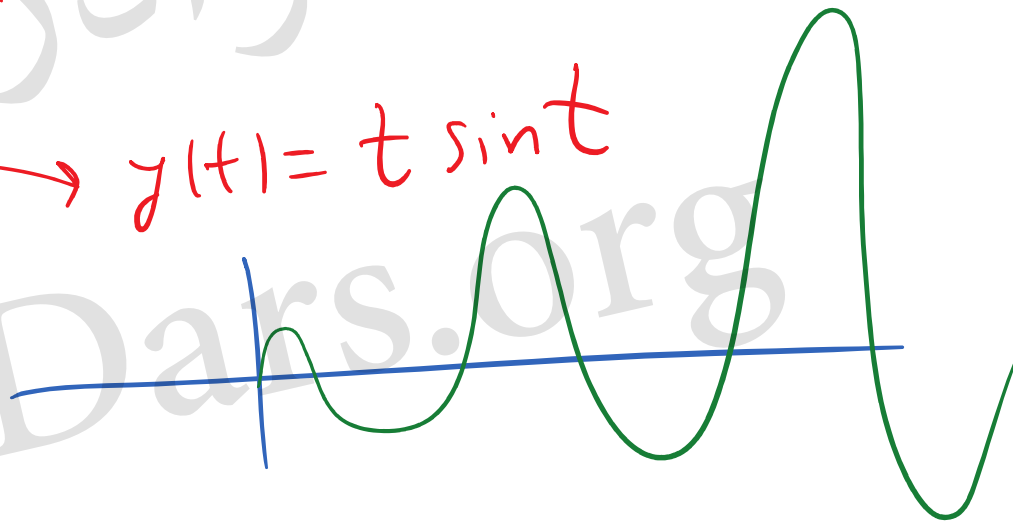
باید ری:

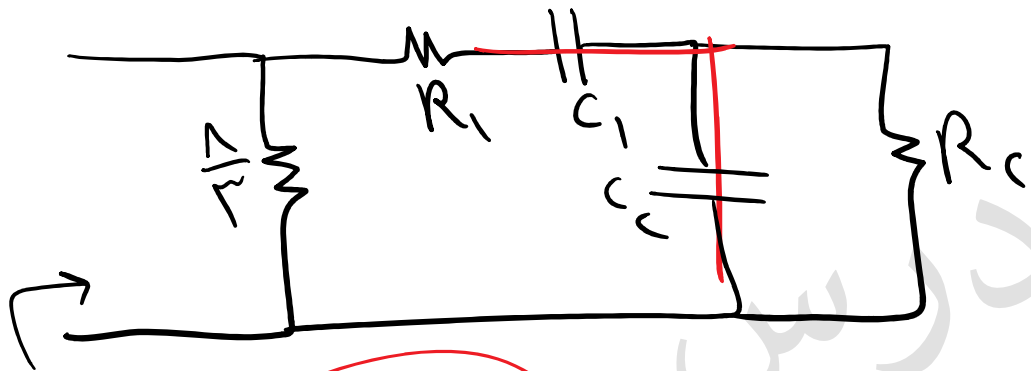
$$H(s) = \frac{1}{s^2 + 1}$$

$$x(t) = \sin t \rightarrow \frac{1}{s^2 + 1}$$

Y(s)

$$y(t) = t \sin t$$





$$Z = K \frac{(s+r)(s+r')}{(s+1)(s+r'')}$$

$$s=0 \rightarrow \frac{1}{Cs}$$

$$Z: K \times \frac{1}{Cs}$$

$$\Rightarrow K=1$$

$$R_i = ?$$

$$s \rightarrow \infty$$

$$Z=1$$

$$\left(\frac{1}{r} \parallel R_1 \right) = 1$$

$$R_1 = \frac{1}{r}$$

$$s = j\omega$$

$$h(t) = \left(\frac{r}{r} e^{-rt} - \frac{1}{r} e^{-\frac{t}{r}} \right) u(t+1)$$

$$e_s = 1 + \textcircled{r \cos t}$$

$$H(s) = \frac{r}{r} \frac{1}{s+r} - \frac{1}{r} \frac{1}{s+\frac{1}{r}} = \frac{\frac{s}{r}}{(s+r)(s+\frac{1}{r})}$$

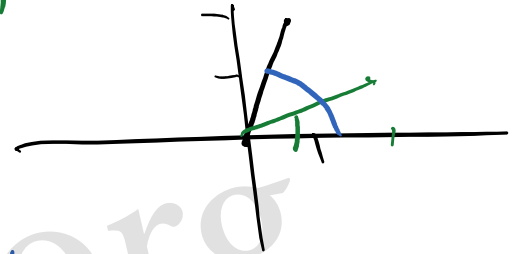
$$H(j\omega) = \frac{\frac{j}{r}}{(j+r)(j+\frac{1}{r})} = \frac{j}{(j+r)(rj+1)}$$

$$|H(j\omega)| = \frac{1}{\delta}$$

$$\angle H(j\omega) = \frac{90^\circ}{\tan^{-1} \frac{1}{r} + \tan^{-1} r} = 1$$

X(s)

$$\alpha(j\omega) = r\phi$$



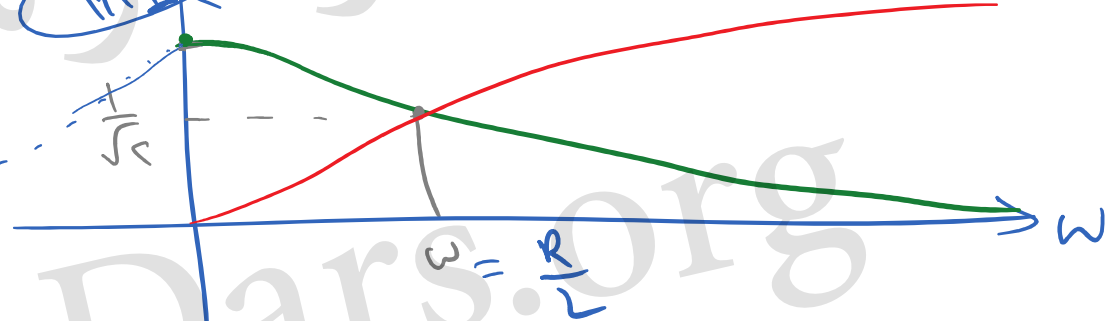
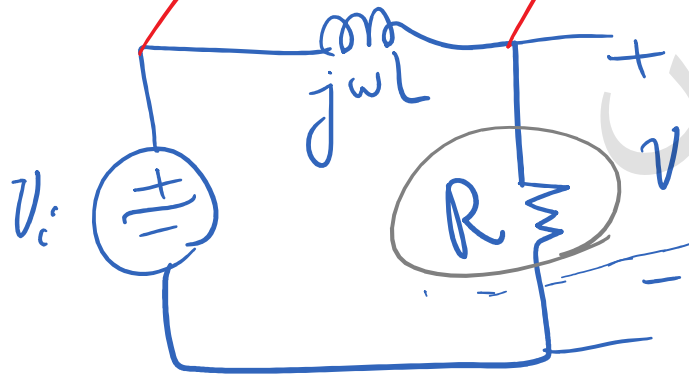
$$\gamma(j\omega) = \left(\frac{1}{\delta} \right) \phi_r$$

$|H(j\omega)|$
 $\angle H(j\omega)$

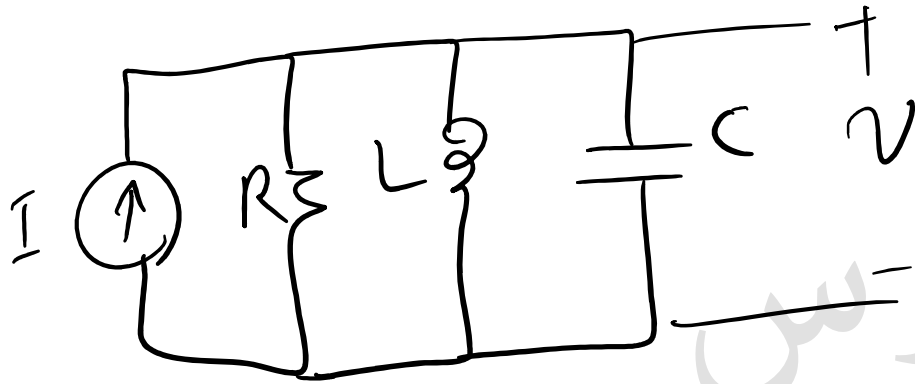
bode (H)

$$v = \frac{R}{R + j\omega L} \times v_i$$

$$H(j\omega) = \frac{v}{v_i} = \frac{R}{R + j\omega L}$$



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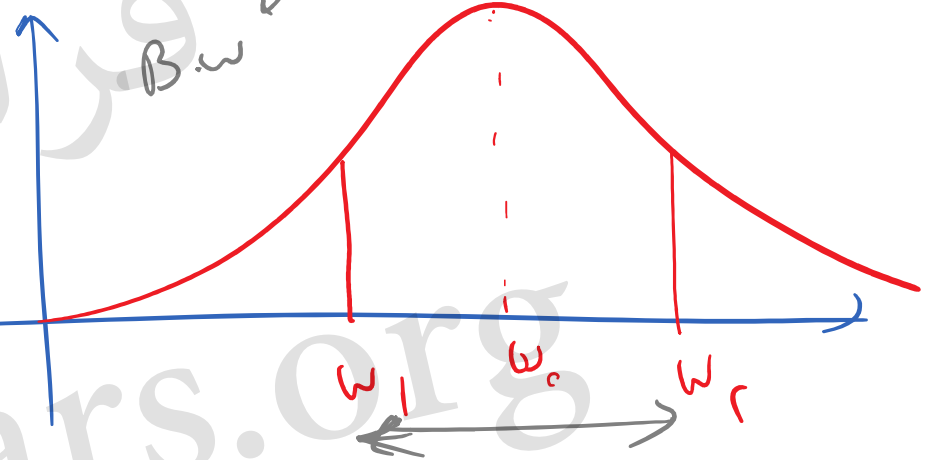


$$\omega_{1,2} = \omega_c \sqrt{1 \pm \frac{1}{rQr}} \pm \frac{1}{rQ}$$

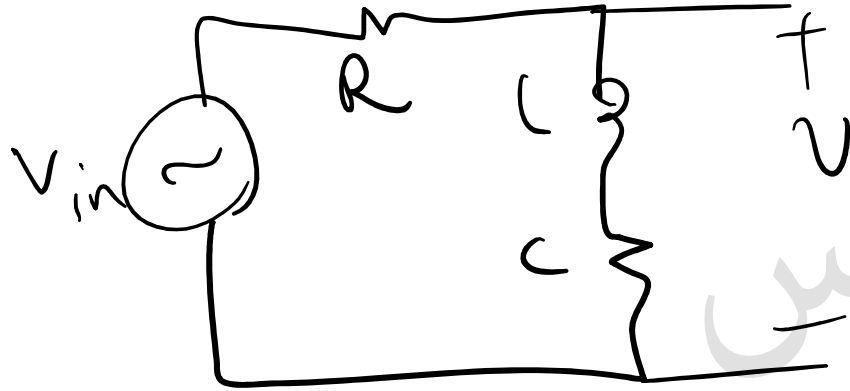
$$H(s) = \frac{1/s}{s^2 + r\alpha s + \omega_0^2}$$

B.W

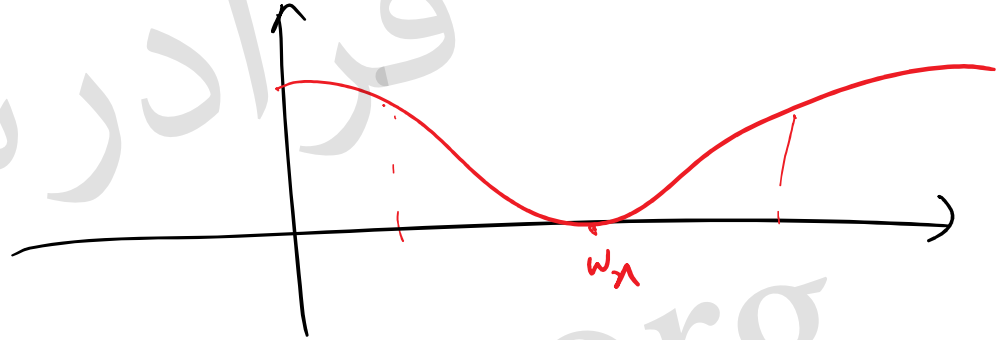
$$Q = \frac{\omega_0}{r\alpha}$$



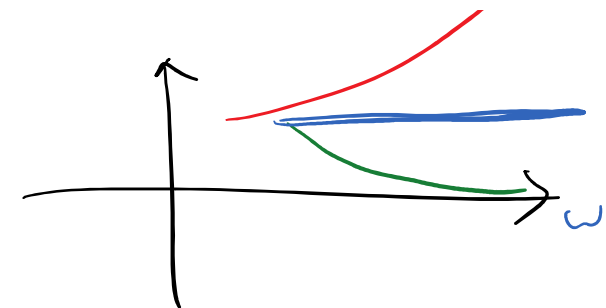
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$$H(s) = \frac{s^r + \omega_n^r}{s^r + 2\alpha s + \omega_0^r}$$

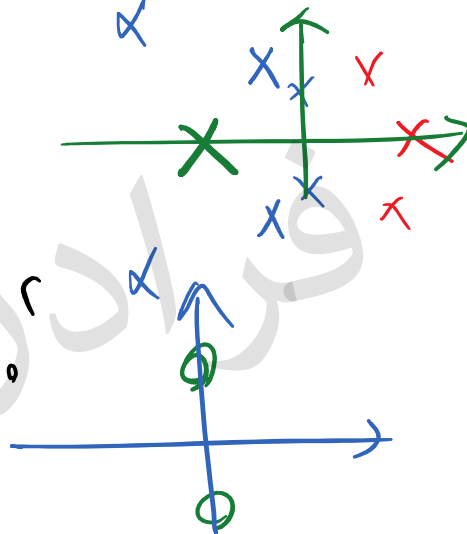


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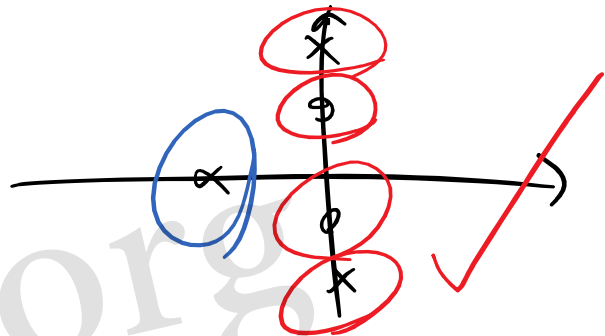
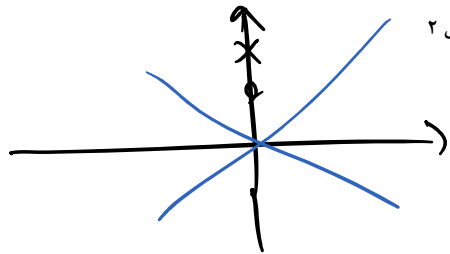
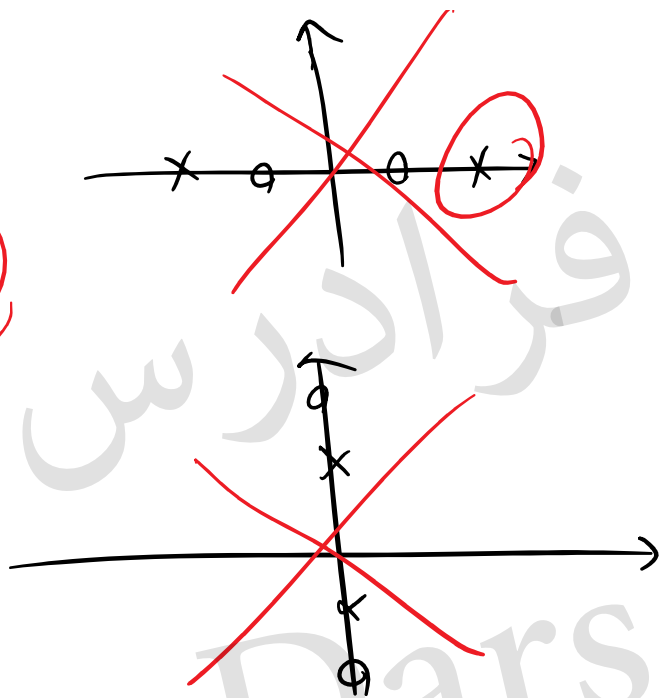
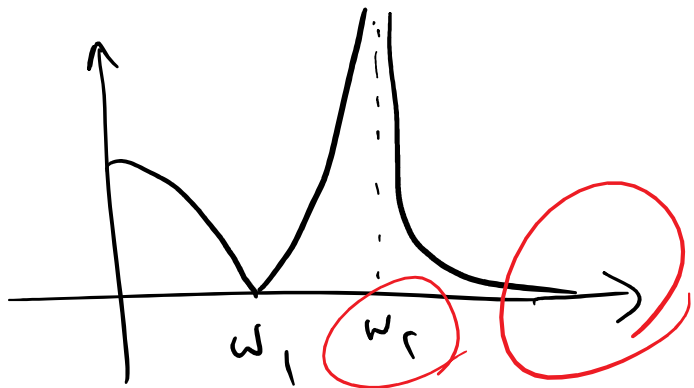


$$e^{-at}$$

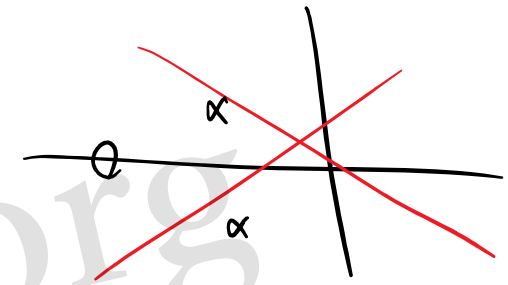
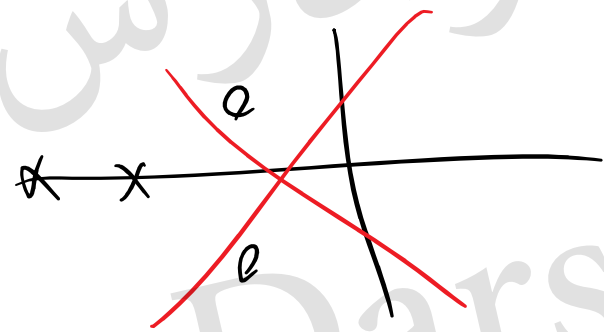
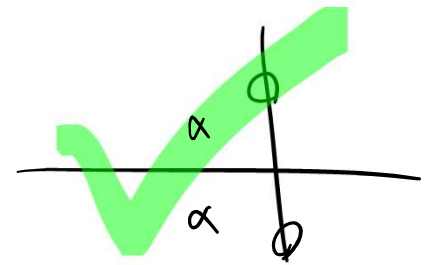
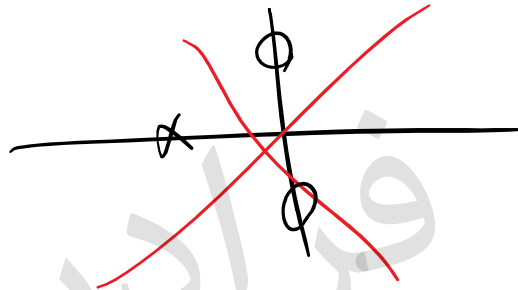
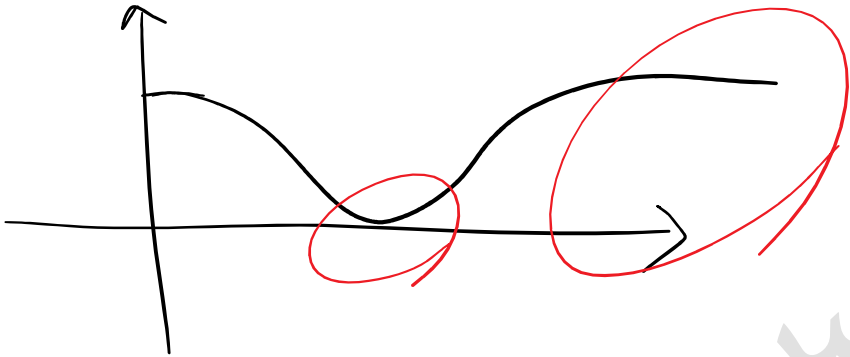
$$s^r + \omega_0^r$$



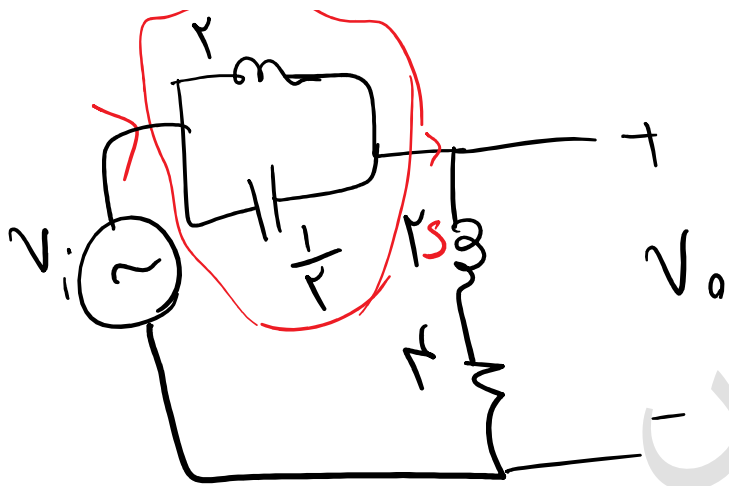
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$$H(s) = \frac{V_o}{V_{in}}$$

$$\underline{s + r}$$

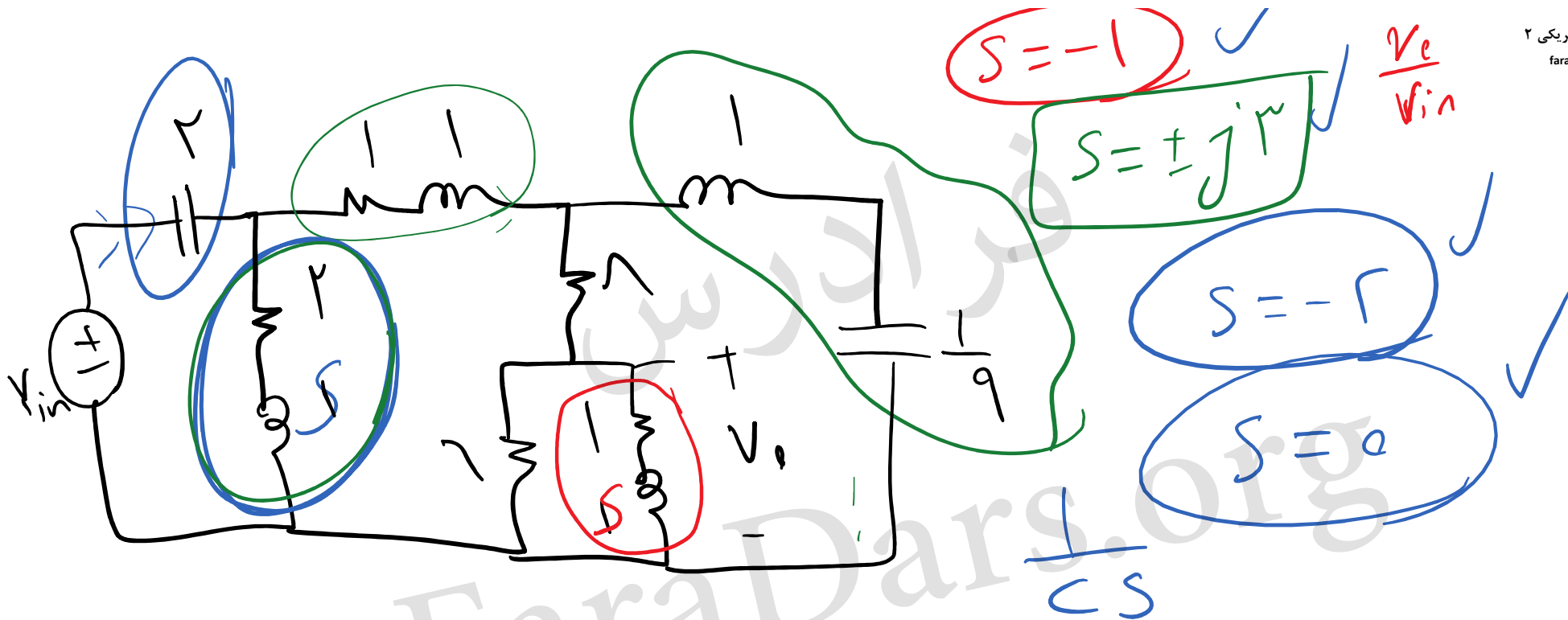
$$rs + r = 0 \Rightarrow$$

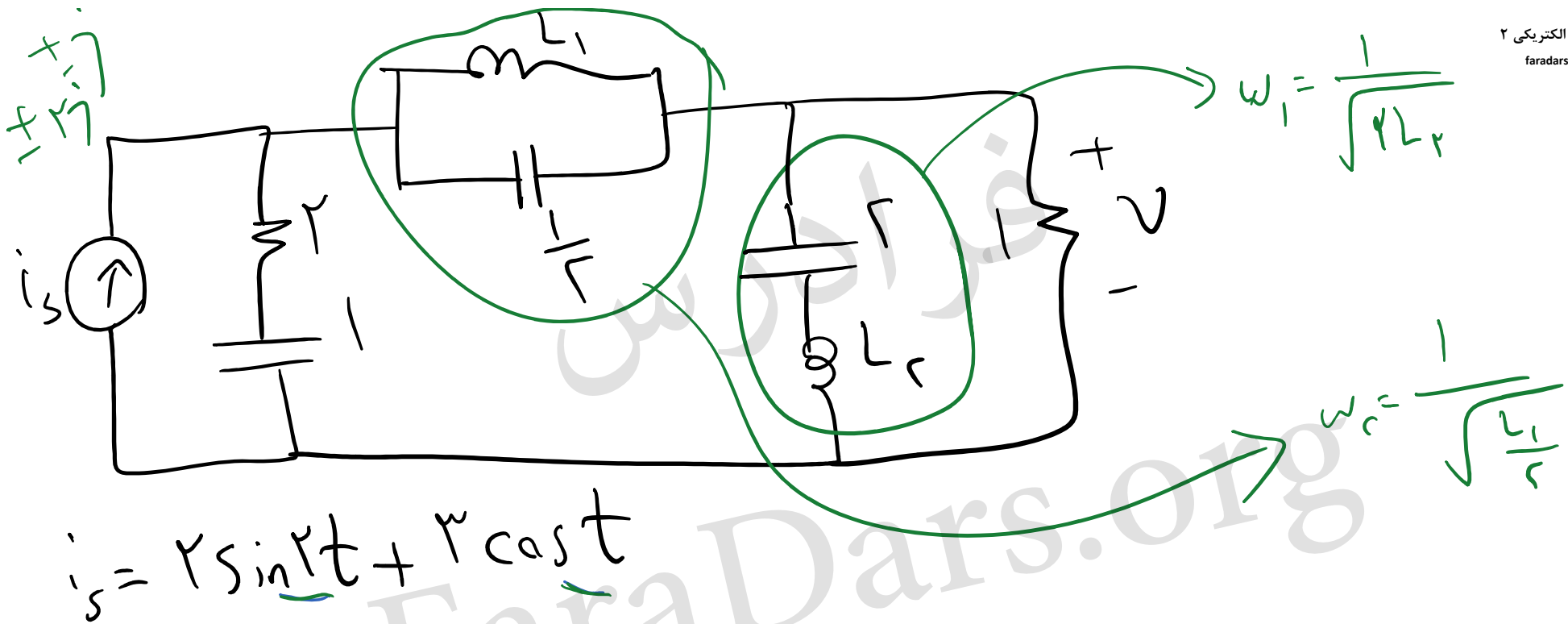
$$\underline{s = -r}$$

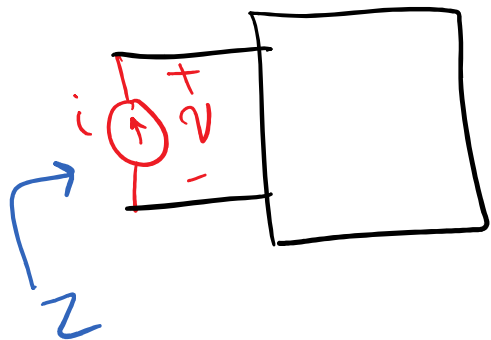
$$\underline{s = \frac{r}{-j}}$$

$$\omega = \frac{1}{\sqrt{LC}} = 1$$

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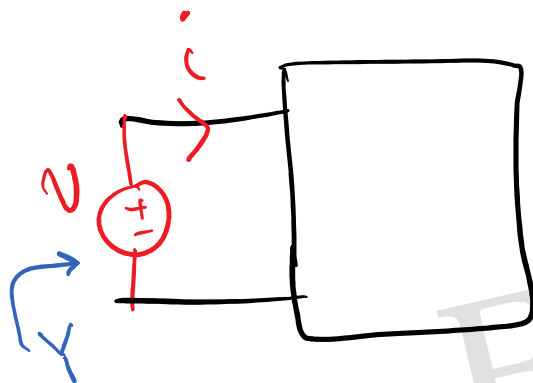
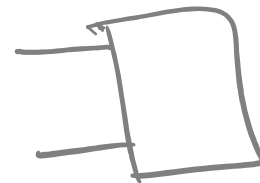




$$\underline{Z} = \frac{A(s)}{B(s)}$$

$$A(s) = 1$$

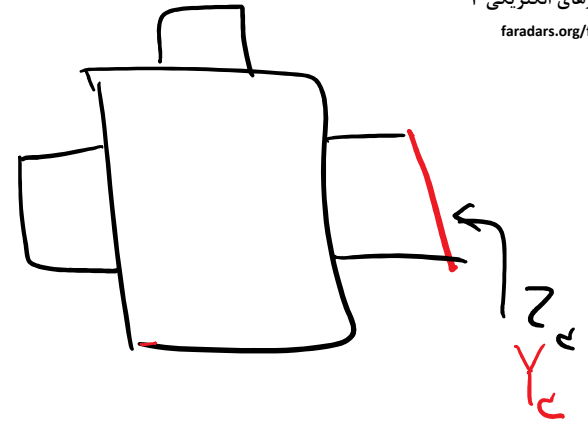
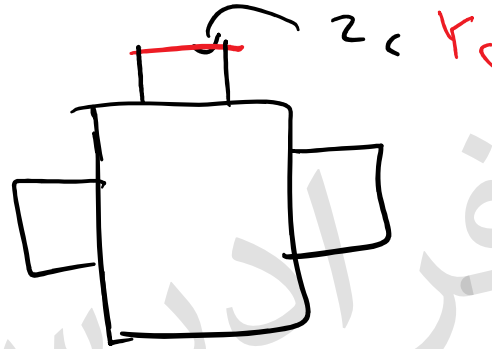
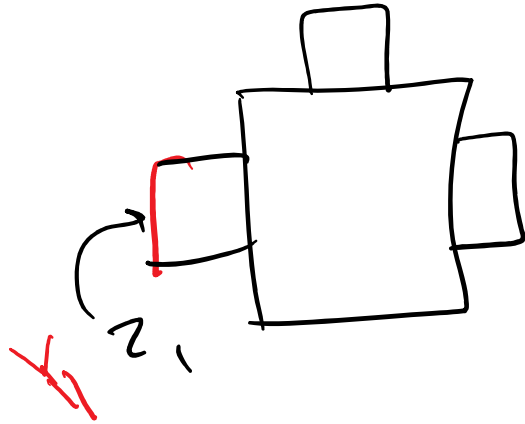
$$B(s) = 0$$



$$Y = \frac{i}{v} = \frac{B(s)}{A(s)}$$

$$A(s) = 0$$

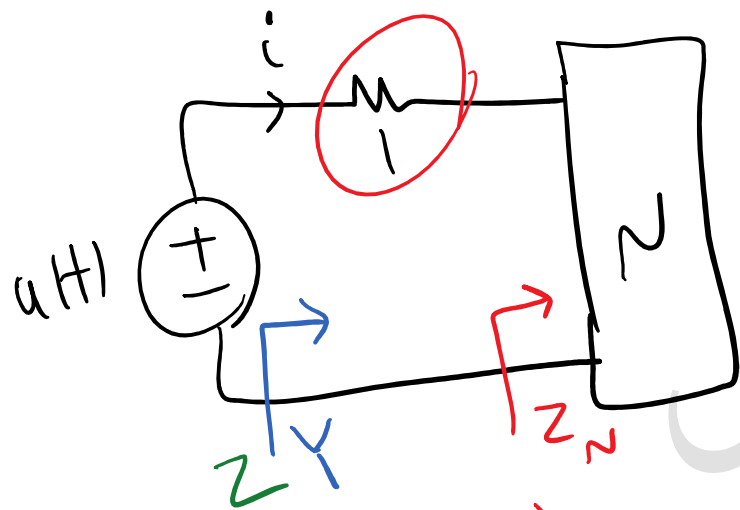




مقاومت های z_c و z_1 را برابر

همه های z_c را

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$$i(t) = \left(1 - \frac{r}{r} e^{-\frac{t}{\tau}}\right) u(t)$$

$$\frac{r}{s} - \frac{r}{r} \frac{1}{s + \frac{1}{r}} = \frac{r(rs+1) - rs}{s(rs+1)}$$

$$= \frac{s+r}{s(rs+1)} \rightarrow Y = \frac{s+r}{rs+1}$$

$$Z = \frac{rs+1}{s+r}$$

$$Z_N = Z - r = \frac{rs+1}{s+r} - 1 = \frac{rs+1-s-r}{s+r} =$$

$$Z_N = \frac{s-1}{s+r}$$



$$Y_N = \frac{s+r}{s-1}$$



12/6

این اسلاید ها بر مبنای نکات مطرح شده در فرادرس

«آموزش مدارهای الکتریکی ۲»

تهیه شده است.

برای کسب اطلاعات بیشتر در مورد این آموزش به لینک زیر مراجعه نمایید

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