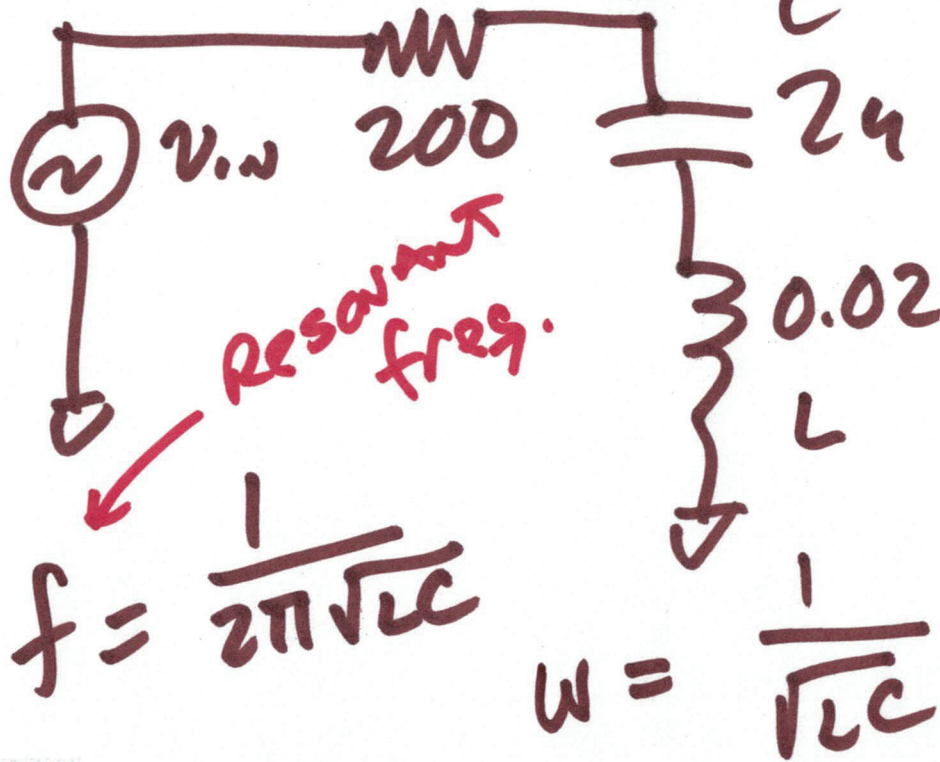


# EF 220 Circuits 1

## Lecture 25

NOV. 24, 2021

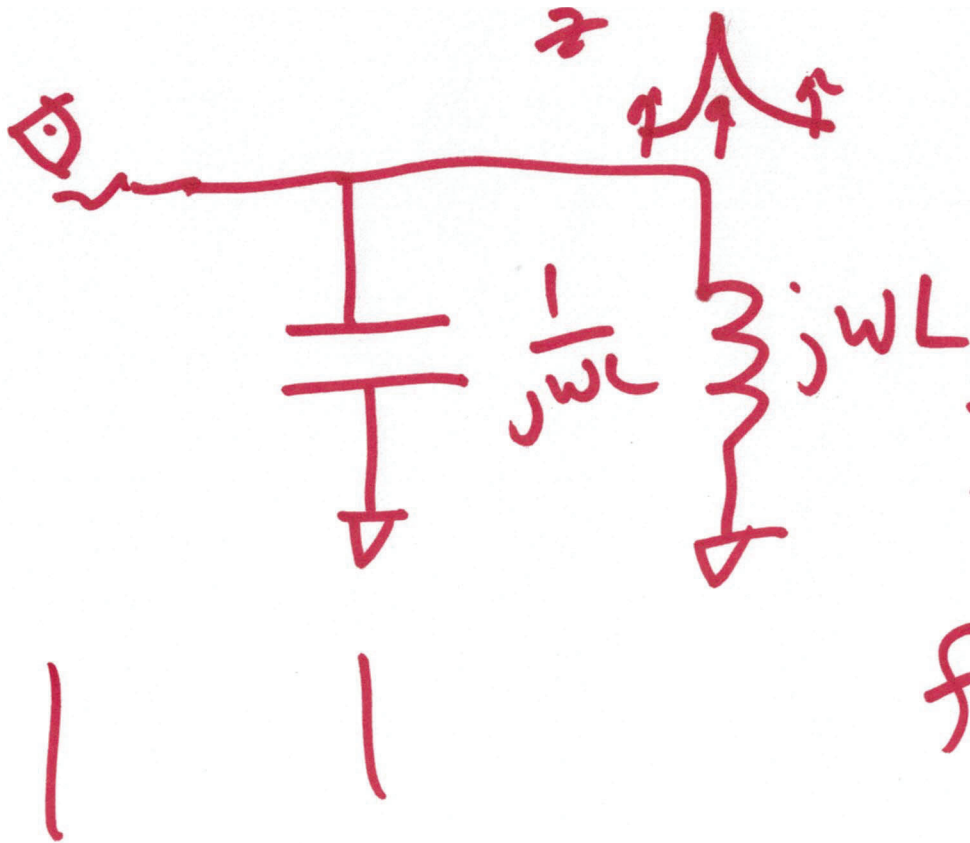


$$\frac{1}{j\omega C} + j\omega L = 0$$

$$\frac{1}{j\omega C} = -j\omega L$$

$$\frac{1}{\omega C} = \omega L$$

$$\frac{1}{LC} = \omega^2$$



$$\frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{R_T}$$

$$j\omega C + \frac{1}{j\omega L} = 0$$

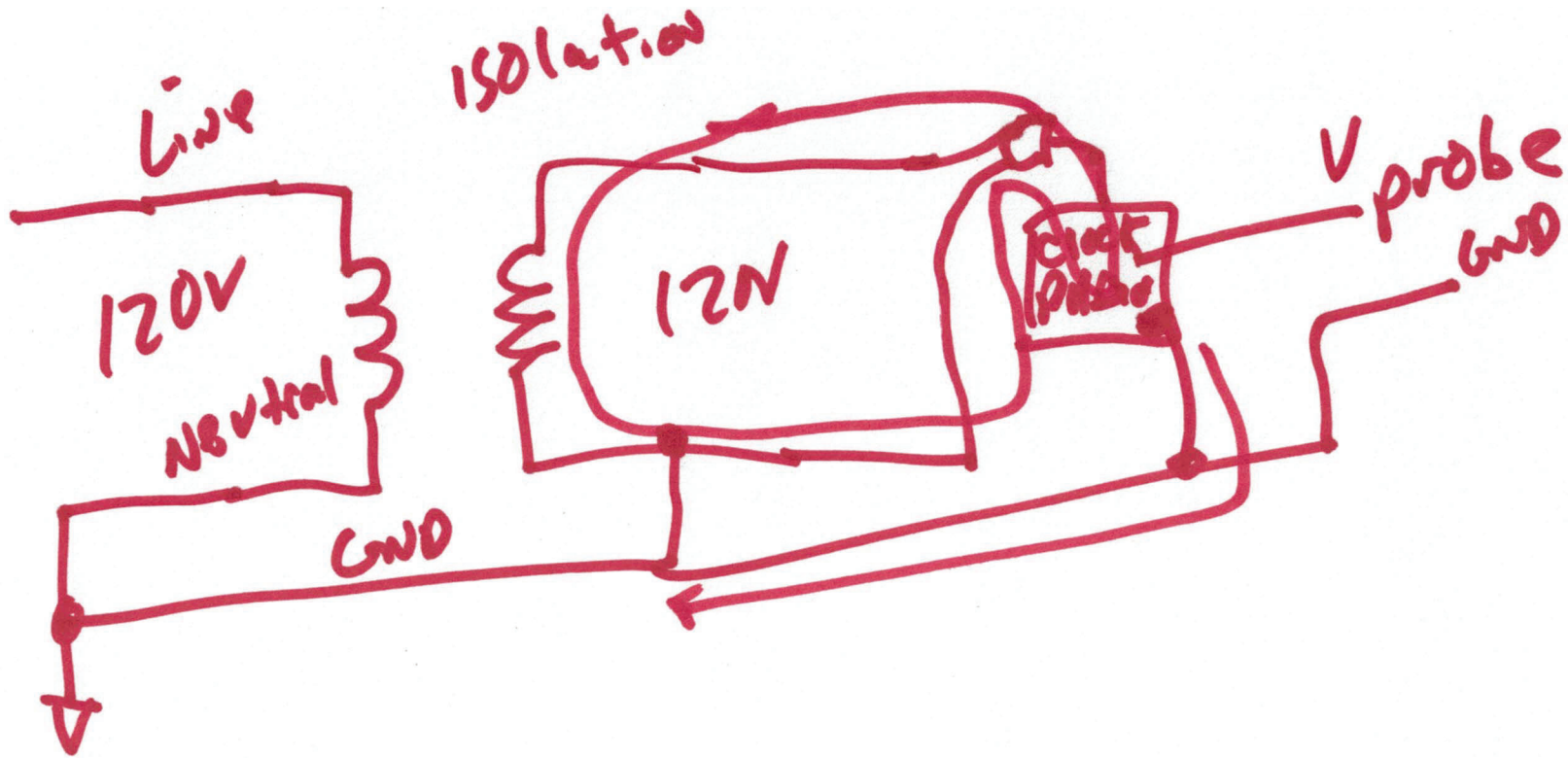
$$f = \frac{1}{2\pi\sqrt{LC}}$$

RESONANT  
frequency

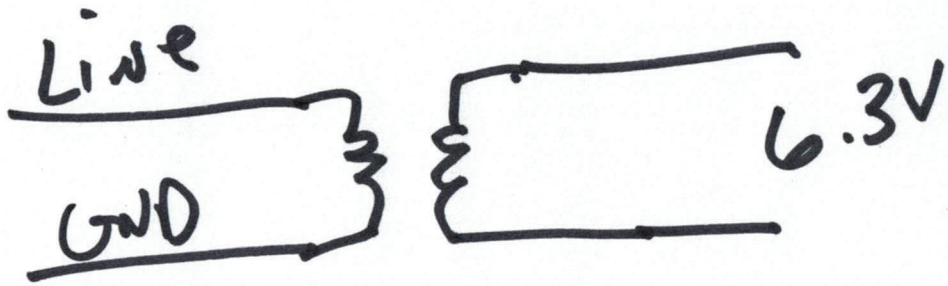


$$120 \cdot \sqrt{2} = 170$$

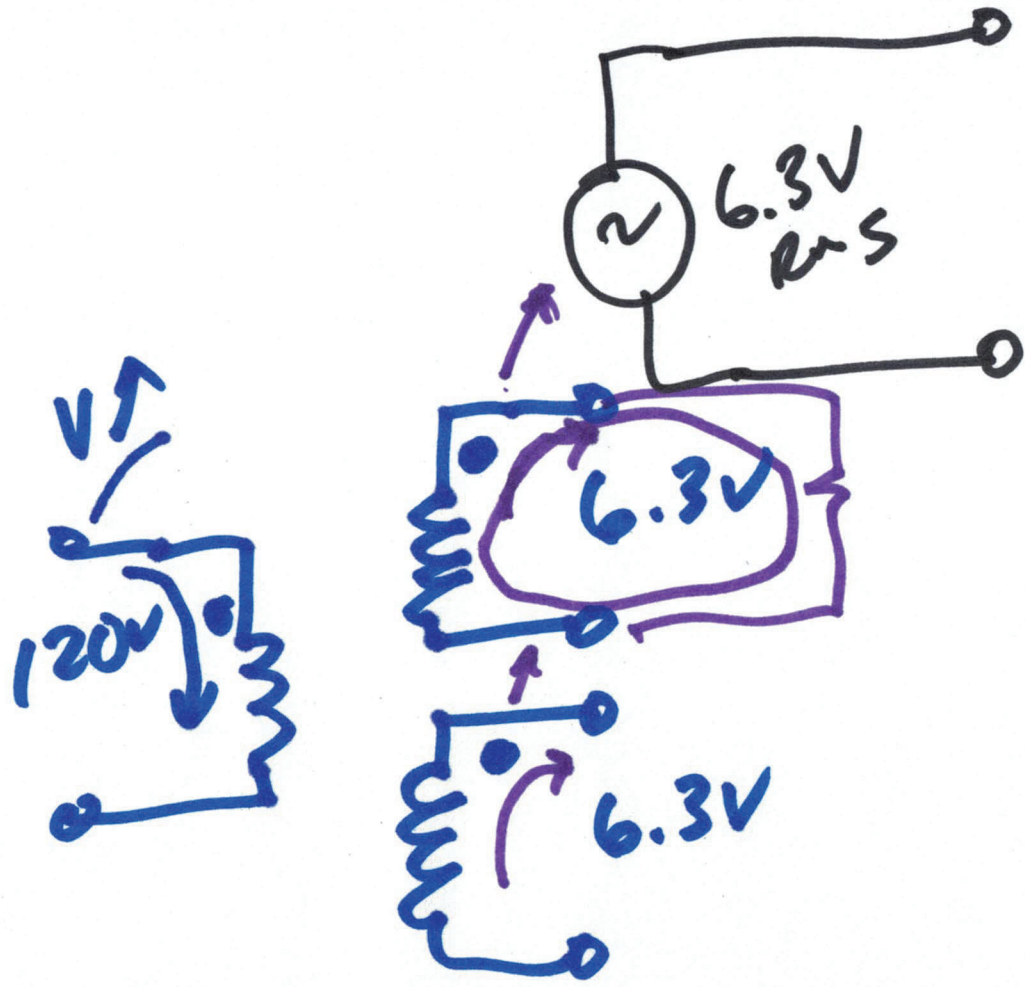
$$V_{rms} = \frac{V_p}{\sqrt{2}}$$

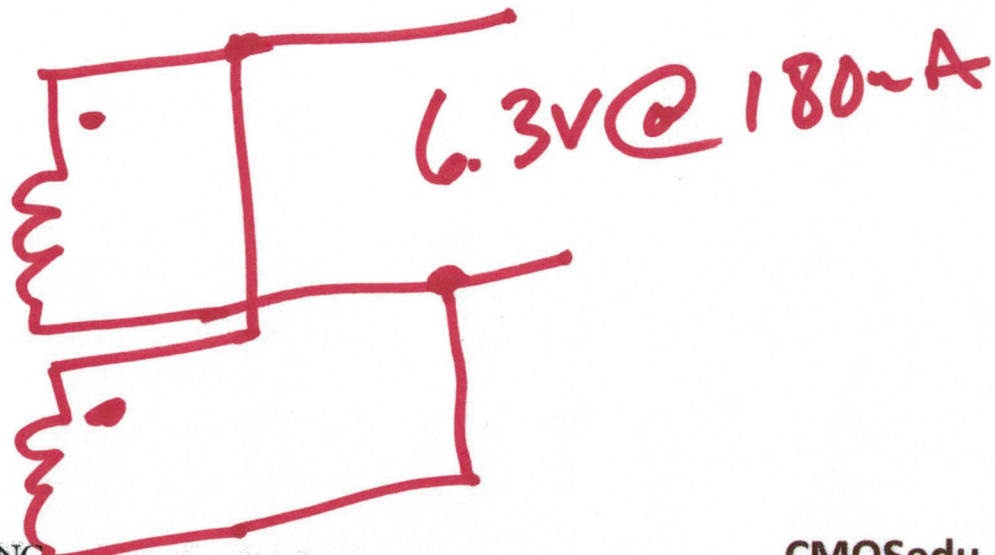
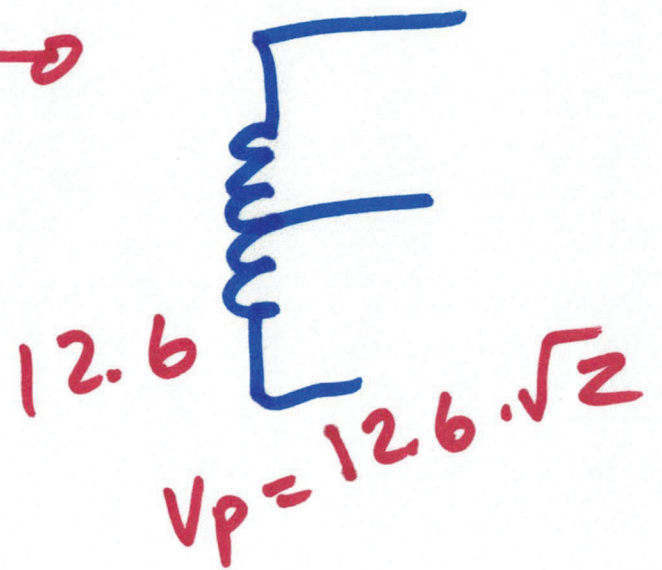
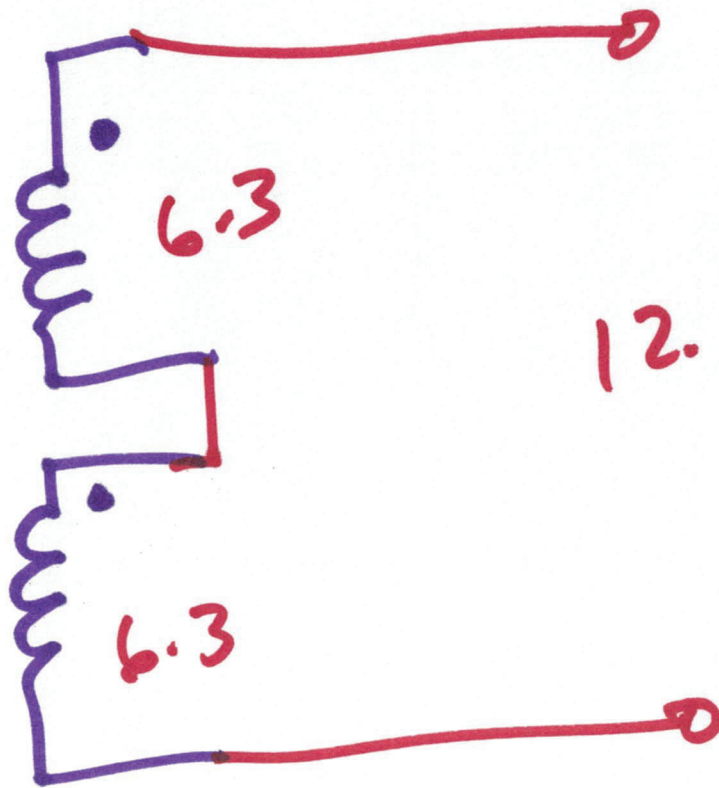
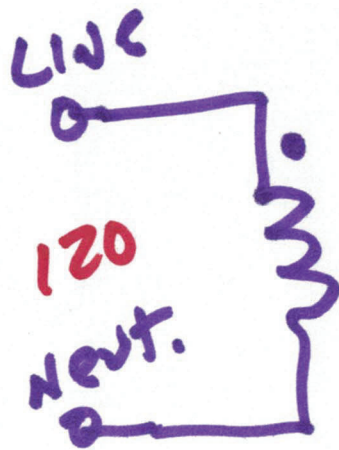


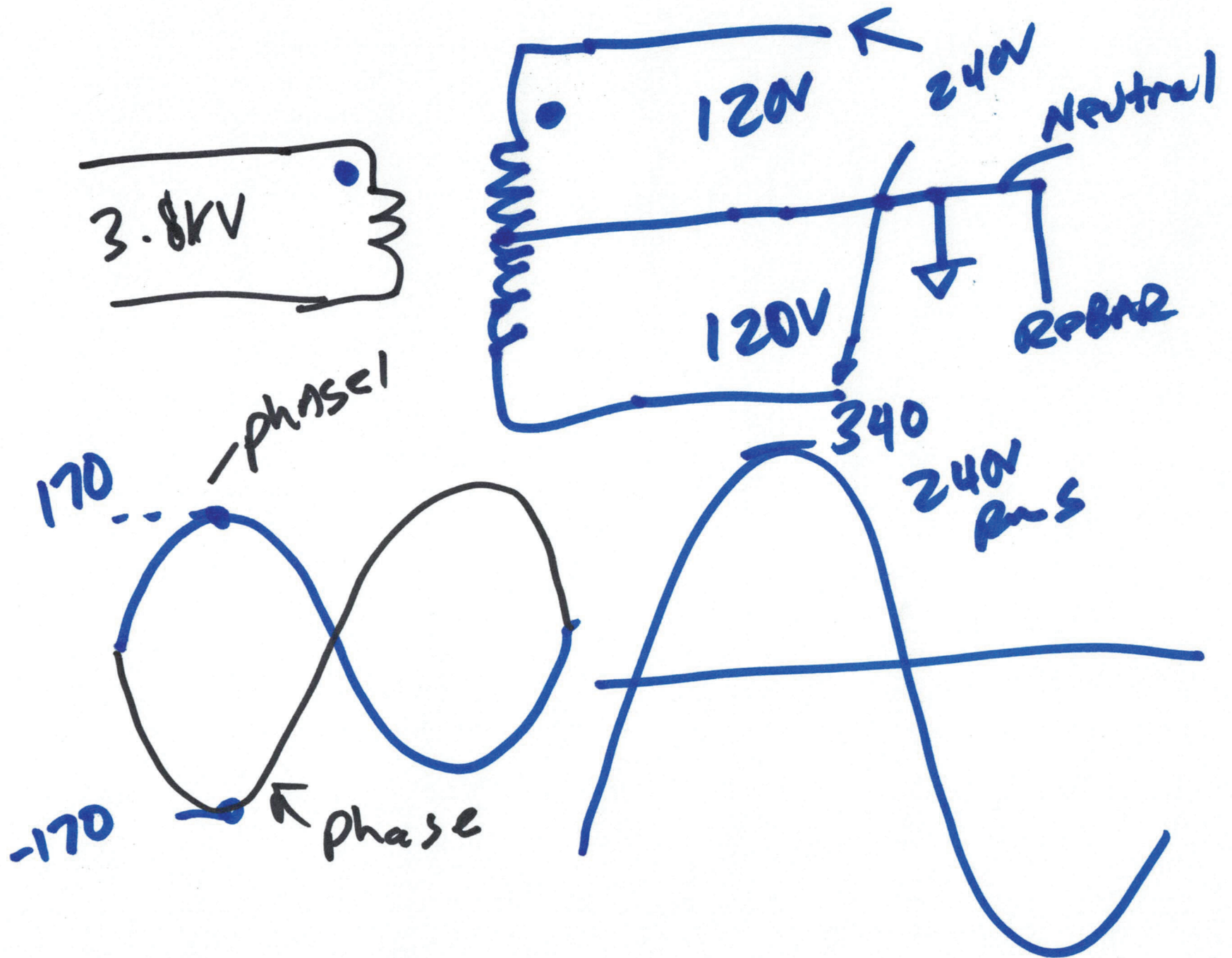
4)



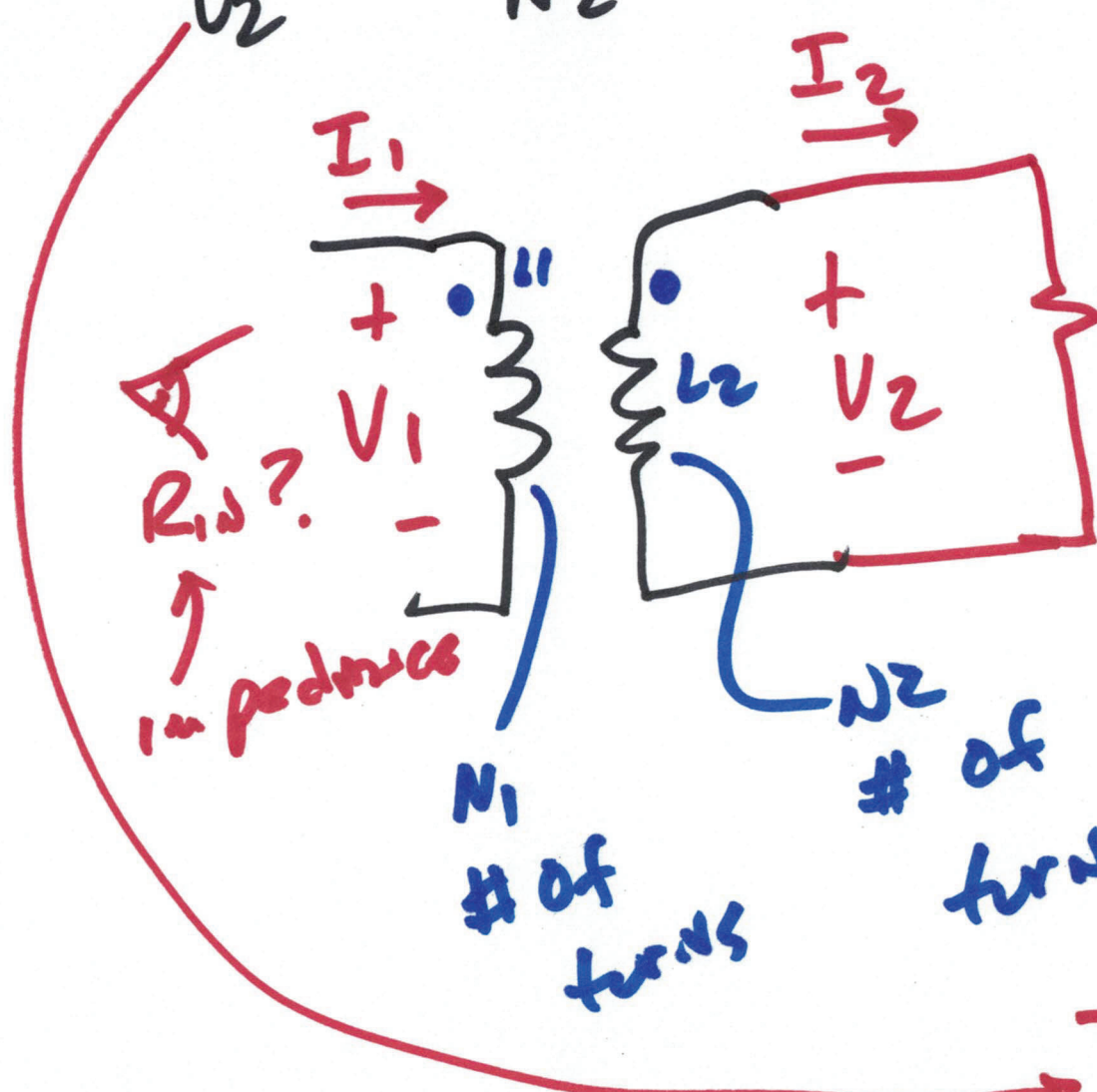
$$V_p = 6.3\sqrt{2}$$







$$\frac{I_2}{I_1} = \frac{V_1}{V_2} = \frac{N_1}{N_2} = \sqrt{\frac{L_1}{L_2}}$$



$$V_2 = R_L \cdot I_2$$

$$R_L = \frac{V_2}{I_2}$$

$$I_2 = \frac{V_2}{R_L}$$

$$\frac{R_{in} \cdot I_1}{R_L \cdot I_2} =$$

$R_{in}?$   
in pedance

$N_1$   
# of turns

$N_2$   
# of turns

8)



$$\frac{R_{in} \cdot I_1}{R_L \cdot I_2} = \frac{V_1}{V_2} = \frac{N_1}{N_2}$$

$$\frac{R_{in}}{R_L} \cdot \frac{N_2}{N_1} = \frac{\cancel{V_1}}{\cancel{V_2}} = \frac{N_1}{N_2}$$

$$R_{in} = R_L \cdot \left( \frac{N_1}{N_2} \right)^2$$