

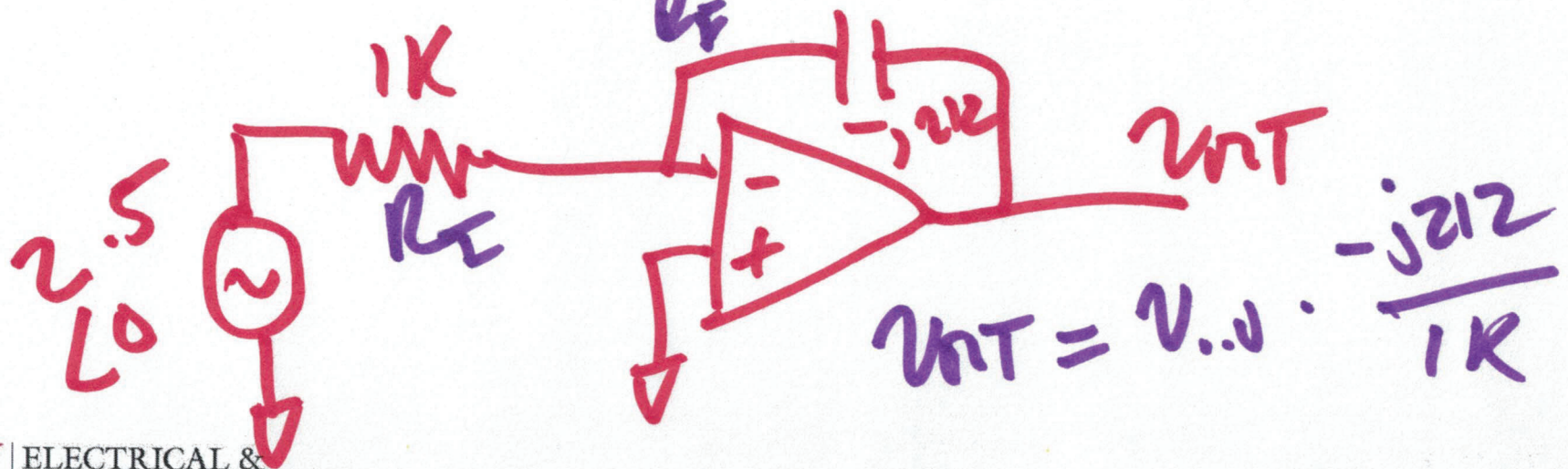
EE 220 circuits I

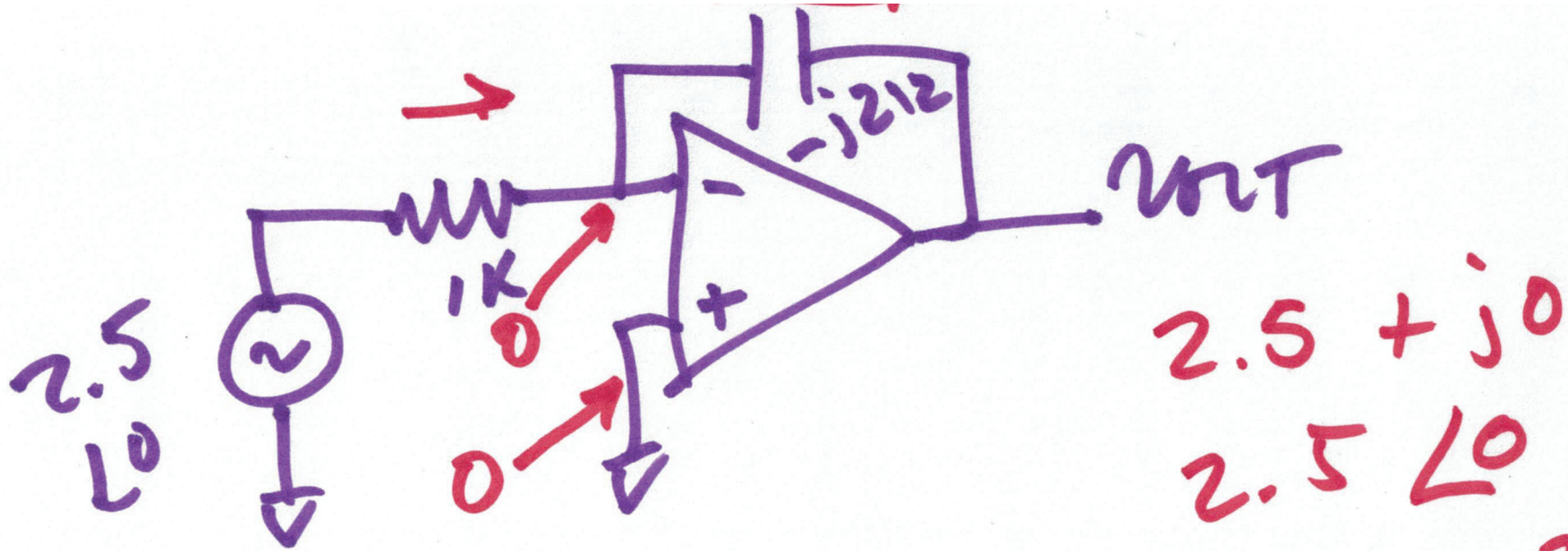
Lecture 26

December 5, 2022

$$Z_c = \frac{1}{j \cdot 2\pi \cdot 500 \cdot 1.5 \mu F}$$

$$= -j212$$



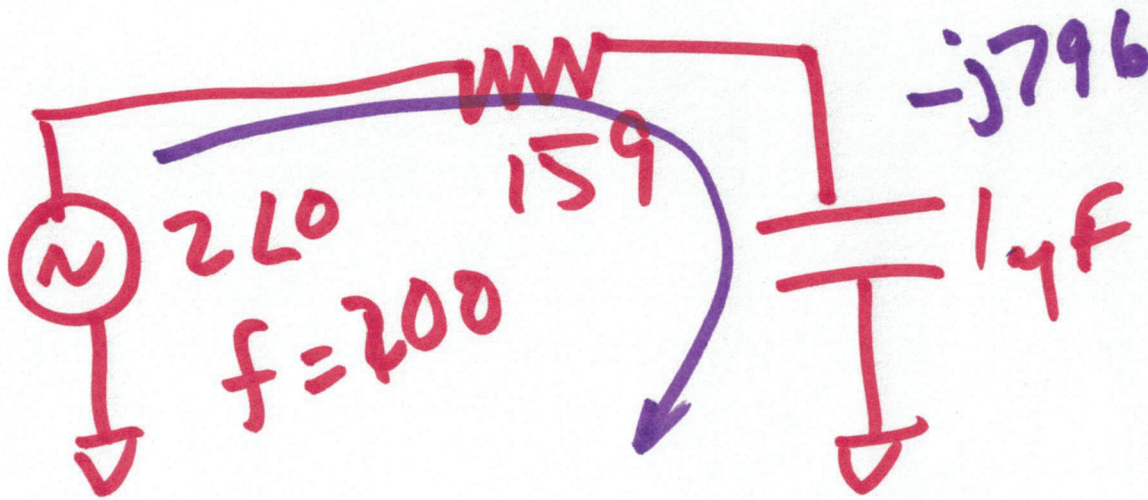


$$\frac{2.5 \angle 0}{1k \angle 0} = \frac{0 + v_{out}}{+j212} = \frac{v_{out}}{212 \angle 90}$$

$$v_{out} = \frac{2.5 \angle 0 \cdot 212 \angle 90}{1k \angle 0}$$

$$= .53 \angle 90$$

$$= .53 \sin(2\pi \cdot 500 \cdot t + 90)$$



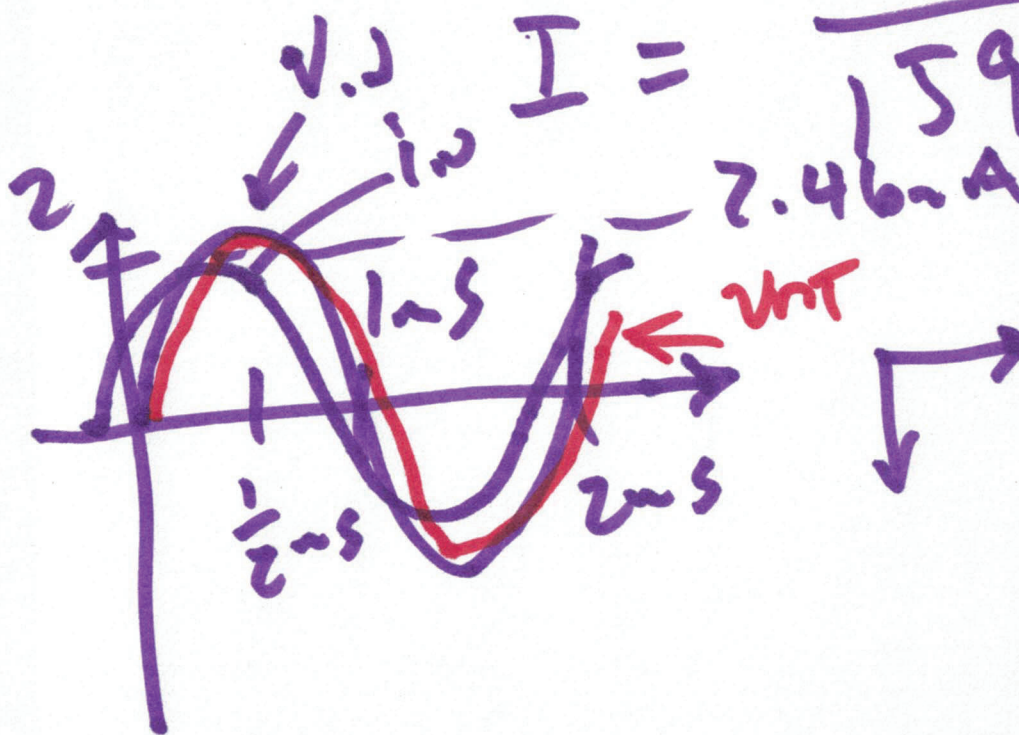
ELI the ICE

$$I = \frac{220}{159 - j796} = \frac{220}{811 \angle -79^\circ}$$

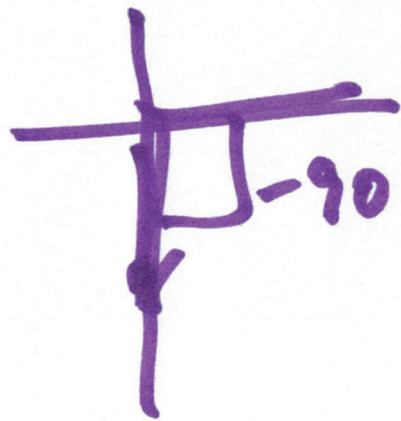
$$I = 2.46 \text{ mA} \angle 79^\circ$$

$$79 = 360 \cdot \frac{t_d}{5 \text{ ms}}$$

$$t_d = 1.1 \text{ ms}$$



$$V_{out} = 2 \angle 0 \cdot \frac{-j796}{159 + j(-796)} = \frac{796 \angle -90}{811 \angle -79} \angle 0$$



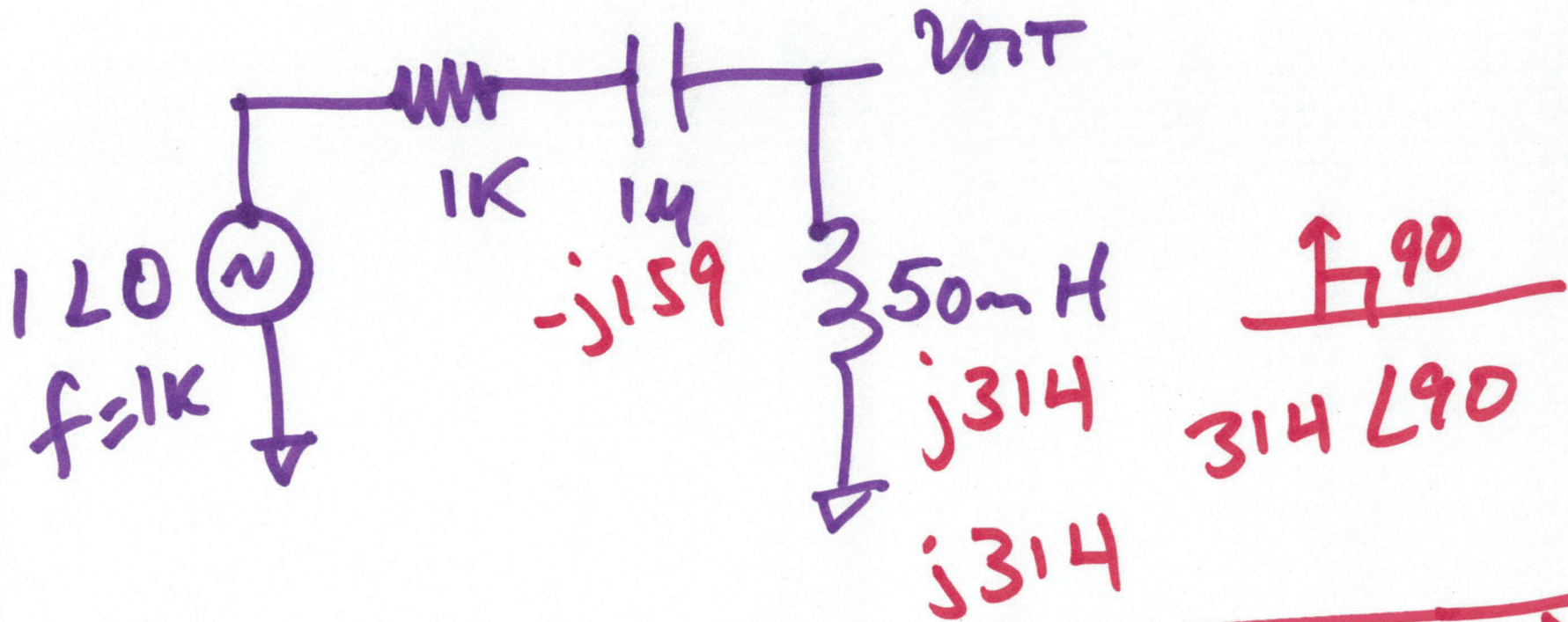
$$V_{out} = 1.96 \angle -90 - (-79) + 0$$

$$V_{out} = 1.96 \angle -11$$

t_d

$$-11 = 360 \cdot \frac{t_d}{5 \mu s}$$

$$t_d = 152 \mu s$$



$$V_{out} = 120 \cdot \frac{314 \angle 90}{1K + j(314 - 159)}$$

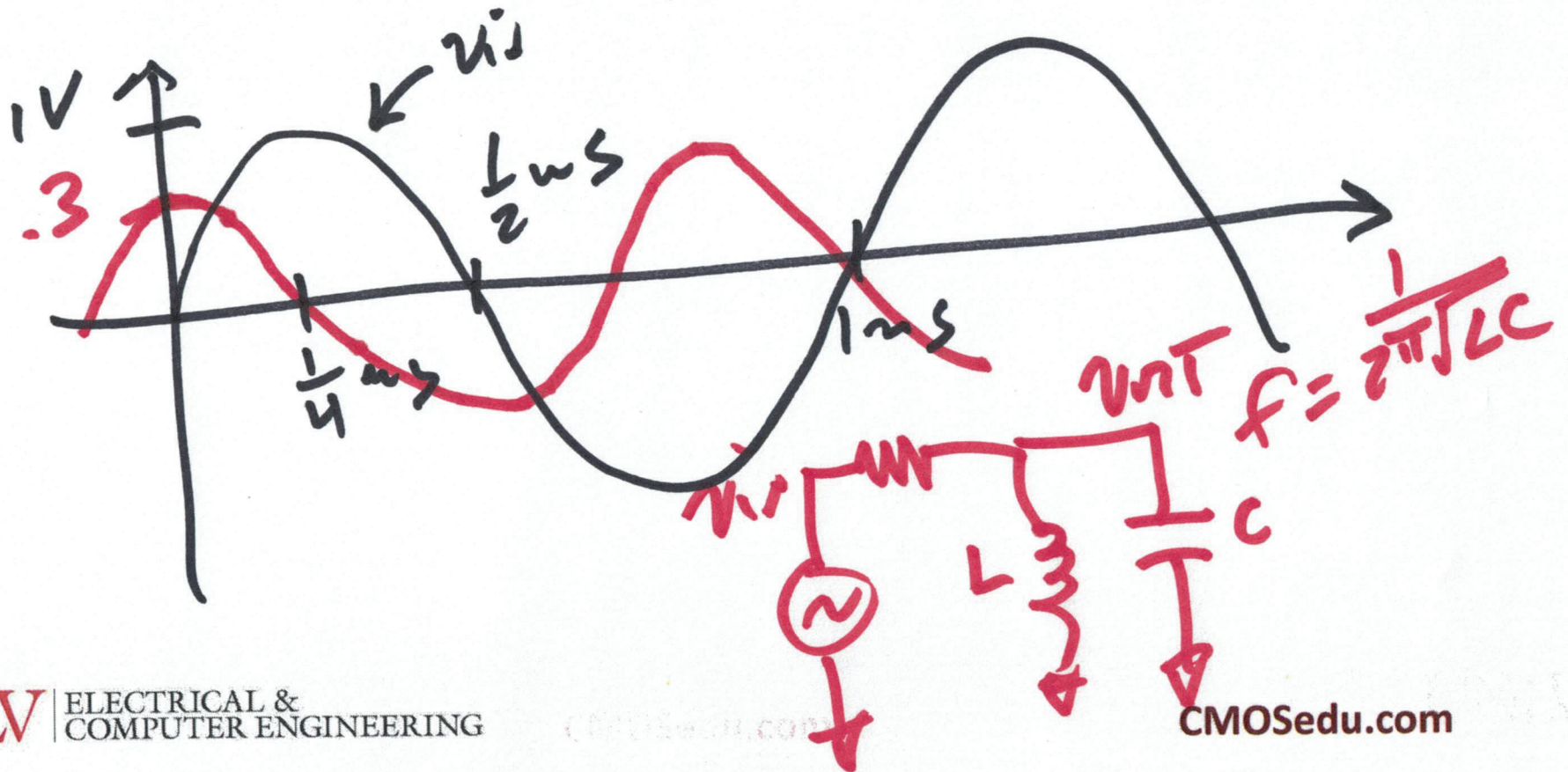
$$= \frac{1012 \angle 8.8^\circ}{155}$$

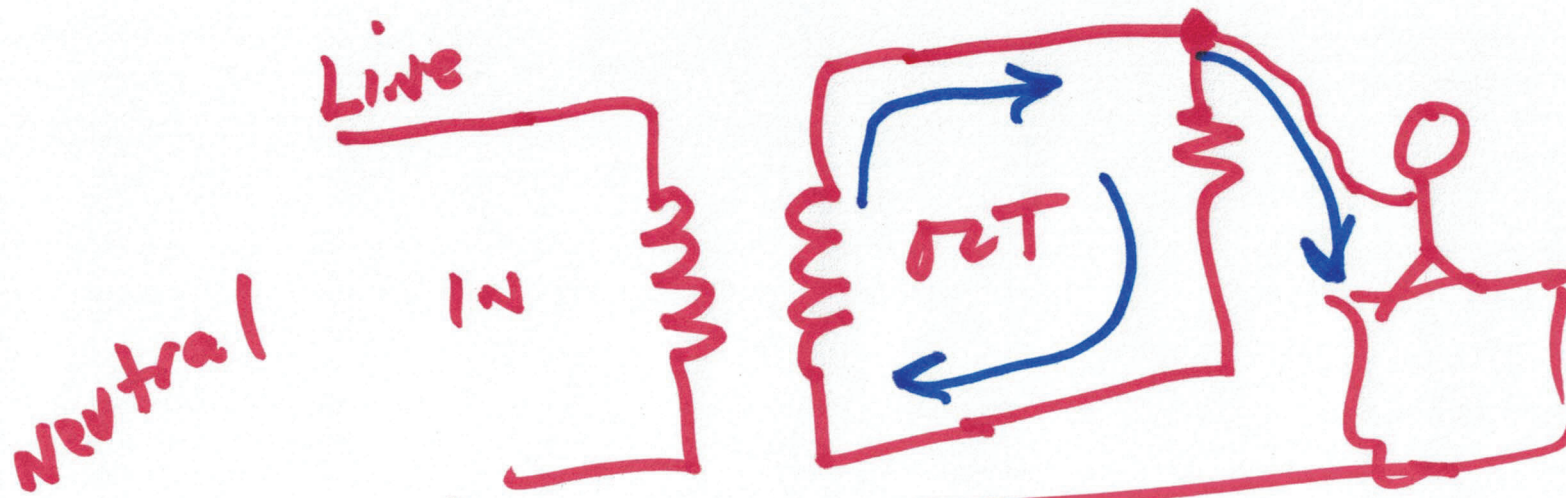
$$V_{out} = .31 \angle 81.2^\circ$$

$$v_{in} = 1 \cdot \sin(2\pi \cdot 10^3 \cdot t)$$

$$v_{out} = .31 \sin(2\pi \cdot 10^3 \cdot t + 81.2)$$

$$\frac{81.2}{360} = \frac{t_d}{10^{-3}}, t_d = 226 \mu s$$





Neutral
 hot 126 GND
 120V RMS
 114
 GND 169.7
 340 → Vpp
 Neutral
 HOT

