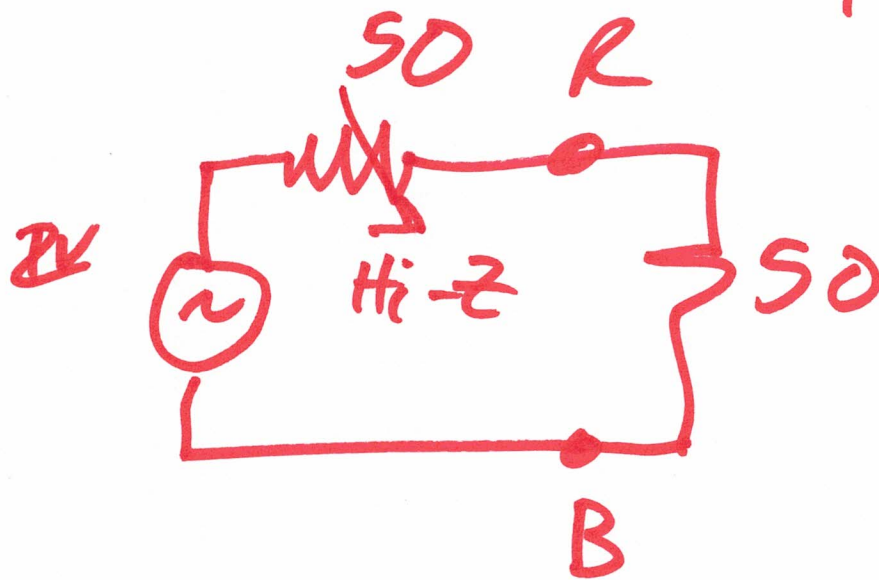


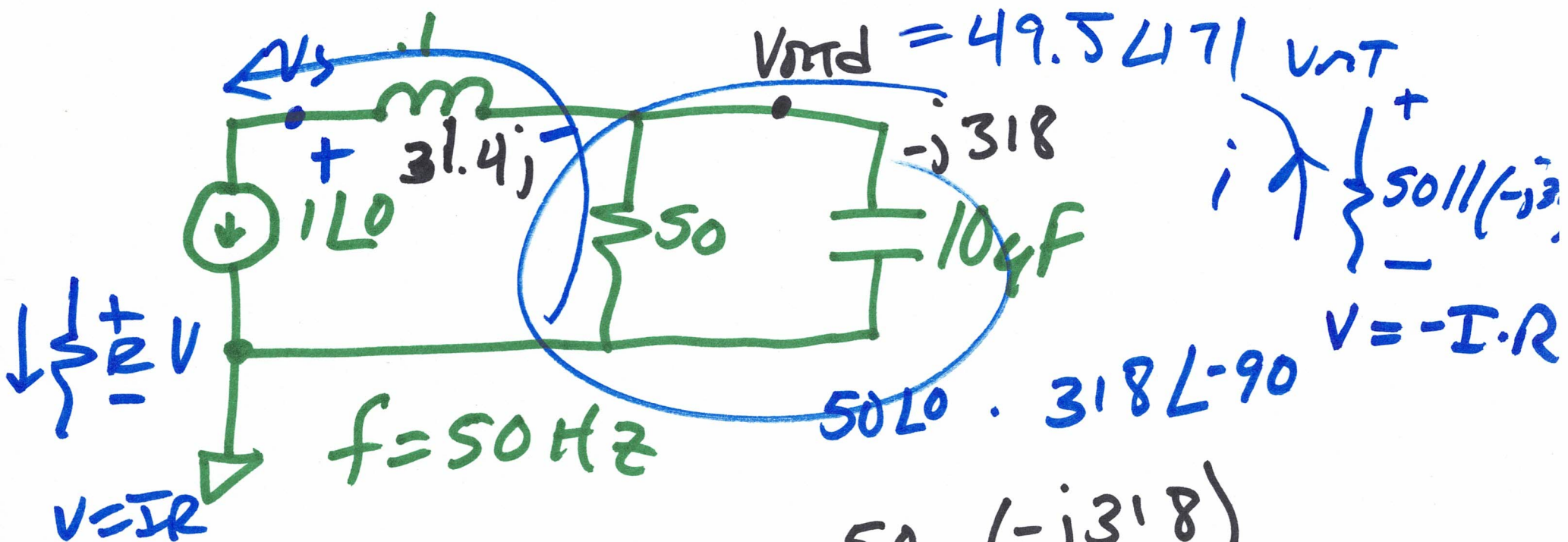
# EE 221 Circuits II

Lecture 8

Feb. 19, 2020



1)

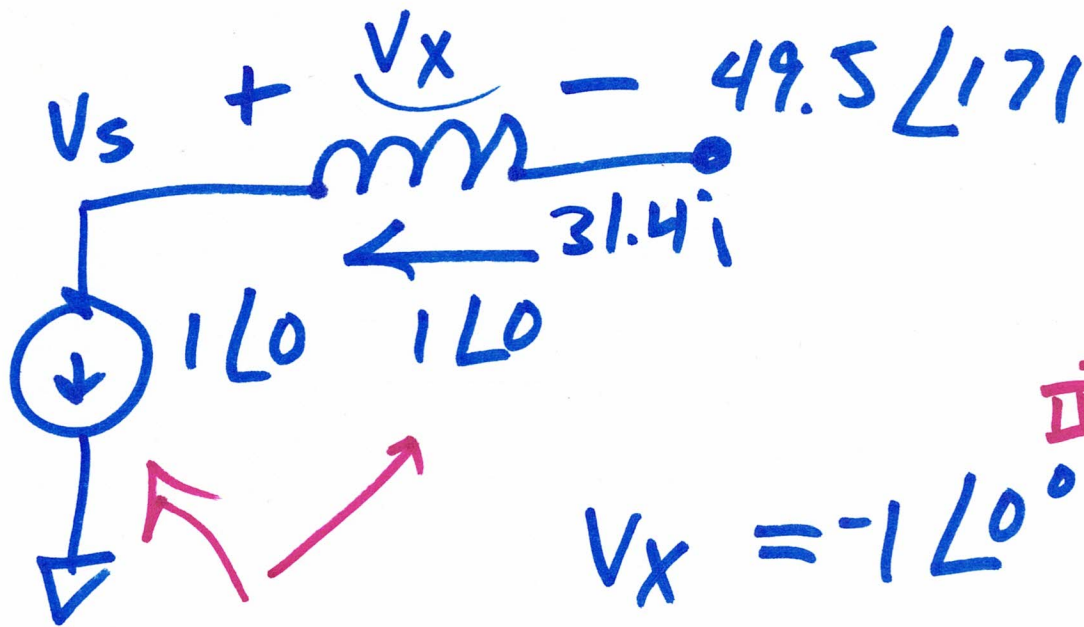


$$V_{Thd} = 10 \cdot \frac{50 \cdot (-j318)}{50 + j(-318)}$$

$$= \frac{1 \angle 180 \cdot 50 \angle 0 \cdot 318 \angle -90}{321 \angle -81}$$

$$= 49.5 \angle 171$$

2)



$$V_x = -1 \angle 0^\circ \cdot j 31.4$$

$$= 1 \angle 180^\circ \cdot 31.4 \angle 90^\circ$$

$$R \angle 0$$

$$x = Re = R \cos \theta$$

$$V_x = 31.4 \angle 270$$

$$y = Im = R \sin \theta$$

$$V_s = 31.4 \angle 270 + 49.5 \angle 171$$

$$0 + j(-31.4) + -49 + j7.7$$

$$-49 + j(-23.7)$$

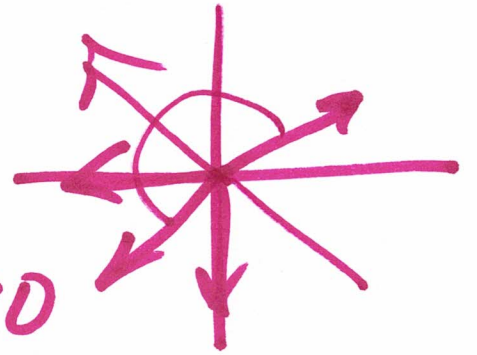
3)

$$V_s = -49 + j(-23.7)$$

$$54.4$$

$$\angle 205.8$$

$$+180$$



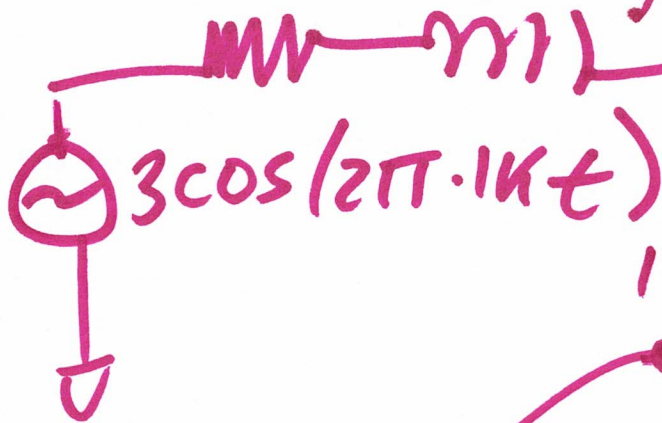
$$V_s(t) = 54.4 \sin(2\pi 50 \cdot t + 205.8)$$

$$= 54.4 \sin(2\pi 50 \cdot t - 154.2)$$

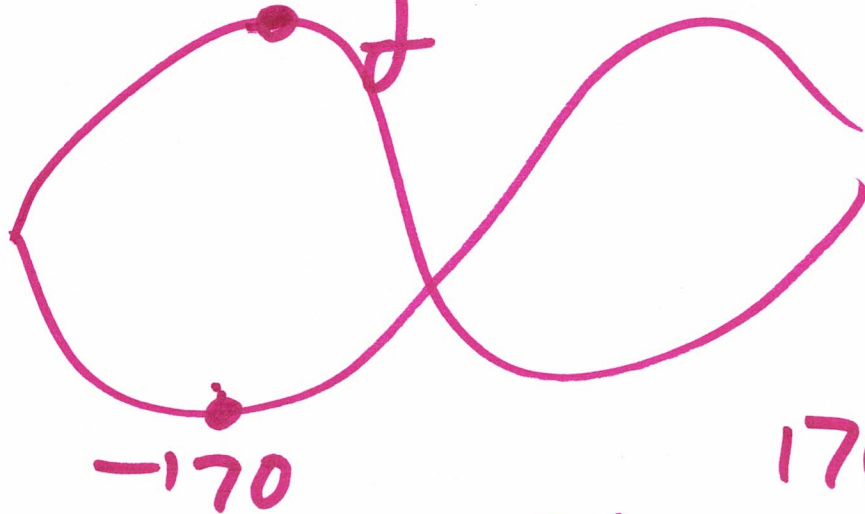
4)

$$I_1 \cos(2\pi 1kT + \theta_1) +$$

$$I_2 \cos(2\pi 60 + \theta_2)$$

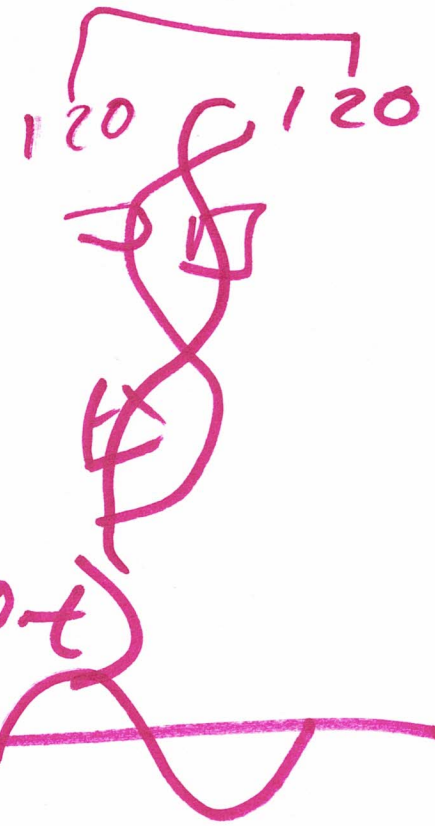


$$170 \cos(2\pi \cdot 60 \cdot t)$$

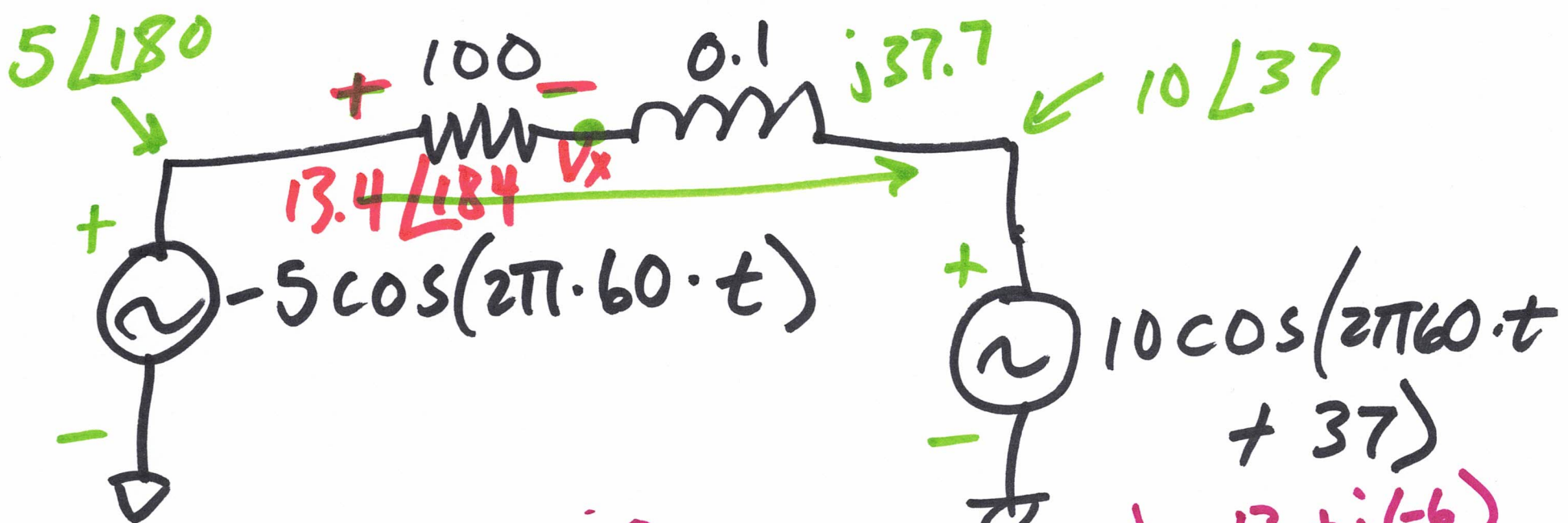


$$R_{ms} = \frac{340}{\sqrt{2}} = 240$$

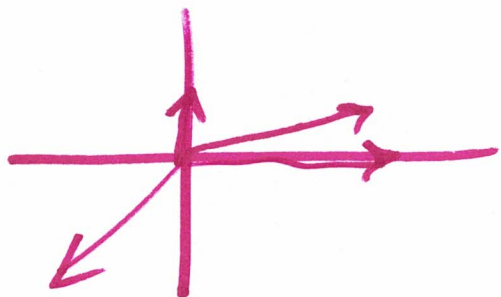
340



5)



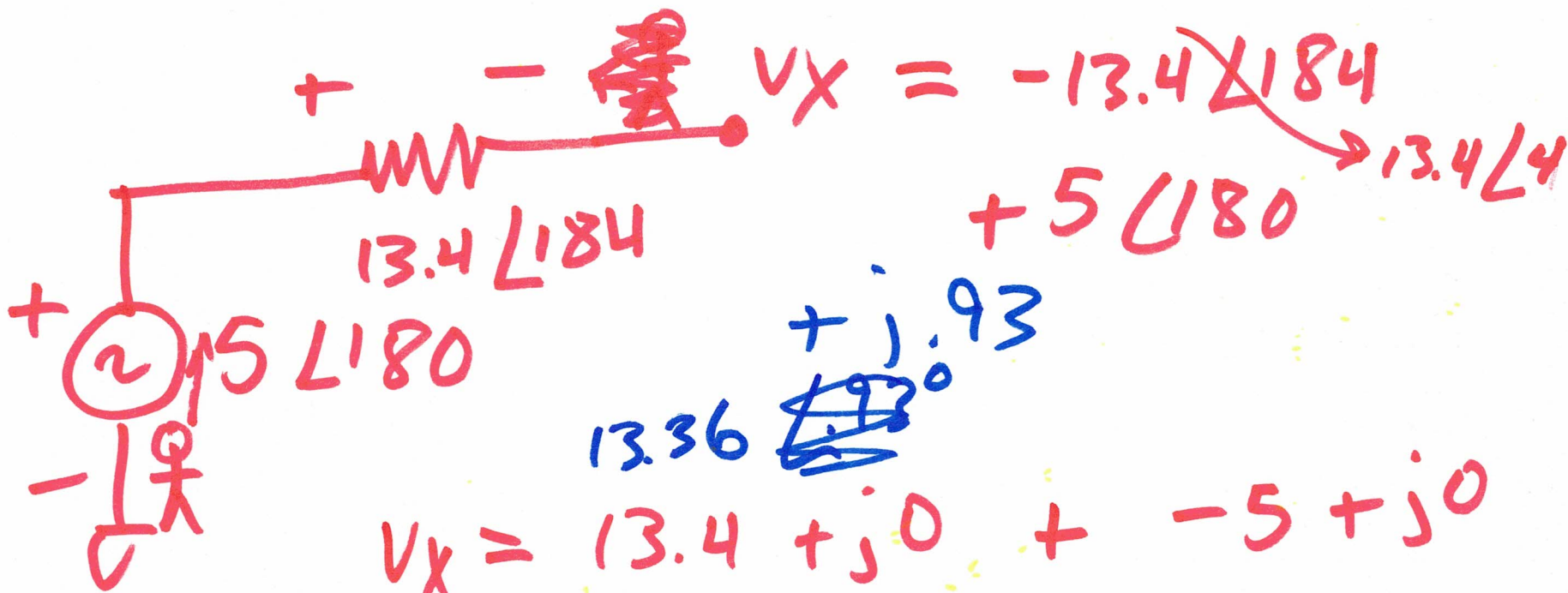
$$I = \frac{-5 + j0 - (8 + j6) - 13 + j(-6)}{100 + j37.7} = \frac{5 \angle 180^\circ - 10 \angle 37^\circ}{107 \angle 20.6^\circ} = \frac{14.3 \angle 20.6^\circ}{107 \angle 20.6^\circ}$$



$$I = 134 \text{ mA} \angle 184^\circ$$

$$i(t) = 134 \text{ mA} \cos(2\pi \cdot 60 \cdot t + 184^\circ)$$

6)



$V_x = 13.36 \angle 93 + 13.36 \angle 193 + 5 \angle 180$

$V_x = 13.4 + j0 + -5 + j0$

$V_x = 8.4 + j0$

$= 8.4 \angle 0$

$V_x = 8.4 \cos(2\pi 60t)$

7)