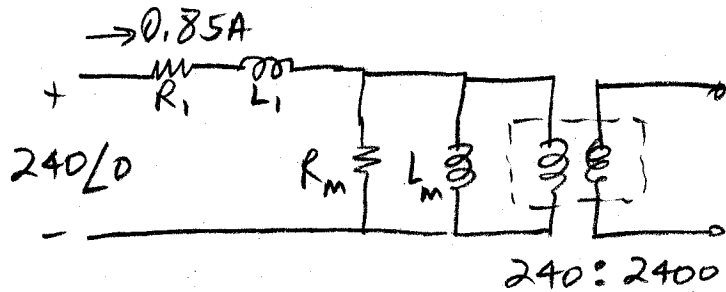
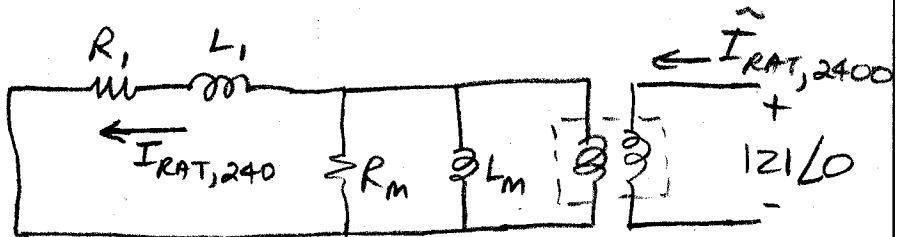


### 5.4 10KVA, 2400/240 V TRANSFORMER

Open CK+ Test



Short CK+ Test



Problem says to neglect resistances  
 $(R_1 = 0, R_m \rightarrow \infty)$

2400:2400,  
 OR  
 1:10

• For the Open CK+ test, Assume  $L_m \gg L_1$ ,

so  $j\omega L_m = \frac{240 \angle 0}{0.85 \angle -90} = j282 \Omega$ , so if  $\omega = 2\pi(60)$ ,

$L_m = \frac{282}{377} = 0.749 \text{ H}$

• For the Short CK+ test, Also assume  $L_m \gg L_1$  AND that there is little core magnetizing current.

$$I_{RAT,2400} = \frac{10000 \text{ VA}}{2400 \text{ V}} = 4.17 \text{ A.}$$

Reflecting  $L_1$  to the 2400V side, we have

$$(j\omega L_1) \left(\frac{2400}{240}\right)^2 (4.17 \angle -90 \text{ A}) = 121 \angle 0,$$

$$\text{so } L_1 = \frac{121 \angle 0}{(j377)(10)^2(4.17 \angle -90)} = 0.770 \text{ mH}$$

IF reflected to the 2400V side,  $L_m$  &  $L_1$  would be 74.9H AND 77mH, Resp.