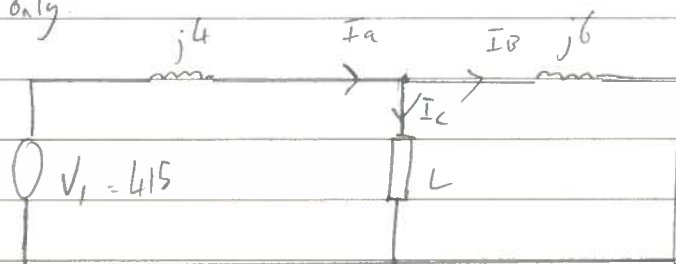


Superposition
For V_1 only



$$V_1 = 415$$

$$Z_L = 35 + j35.7$$

$$I_a = \frac{415}{j4 + \left(\frac{j6 \times 35 + j35.7}{j6 + 35 + j35.7} \right)}$$

$$= \frac{-214.2 + j210}{35 + j41.7} \times \frac{35 - j41.7}{35 - j41.7} = \frac{-7497 + j8932.14 + j7350 + 8757}{1225 + 1738.89}$$

$$\frac{1260 + j16282.14}{2963.89} = 0.43 + j5.49$$

$$\frac{415}{0.43 + j5.49 + j4} = \frac{415}{0.43 + j9.49} = \frac{415}{0.43 + j9.49} \times \frac{0.43 - j9.49}{0.43 - j9.49}$$

$$\frac{178.45 - j3938.35}{0.185 + 90.06} = \frac{178.45 - j3938.35}{90.2} = 1.98 - j43.7$$

$$I_c = \frac{1.98 - j43.7 \times \left(\frac{j6}{j6 + 35 + j35.7} \right)}{35 + j41.7} \times \frac{35 - j41.7}{35 - j41.7}$$

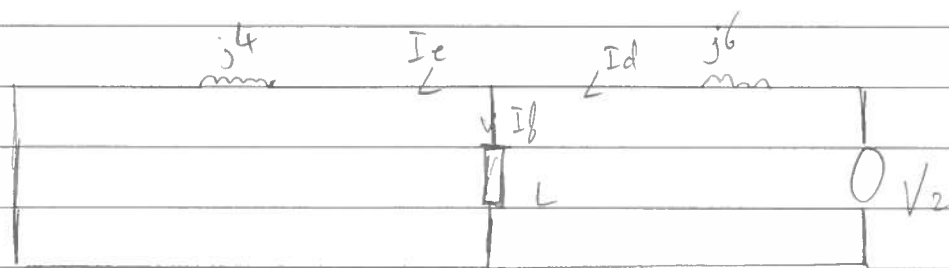
$$= \frac{250.2 + j210}{1225 + 1738.89} = \frac{250.2 + j210}{2963.89} = 0.08 + j0.07$$

$$I_c = (1.98 - j43.7) \times (0.08 + j0.07)$$

$$0.159 + j0.139 - j3.5 + 3.06$$

$$I_c = 3.22 - j3.361$$

For V_2



$$V_2 = -j415$$

$$Z_L = 35 + j35.7$$

$$I_d = \frac{-j415}{j6 + (j4 + 35 + j35.7)}$$

$$= \frac{-j415}{j4 + 35 + j35.7}$$

$$I_d = \frac{-142.8 + j140}{35 + j39.7} = \frac{-142.8 + j140}{35 + j39.7} \times \frac{35 - j39.7}{35 - j39.7}$$

$$= \frac{-4998 - j5669.16 + j4900 + 5558}{1225 + 1576.09} = \frac{560 - j769.16}{2801.09}$$

$$= 0.20 - j0.27 + j6 = 0.20 + j5.73$$

$$\frac{-j415}{0.20 + j5.73} \times \frac{0.20 - j5.73}{0.20 - j5.73}$$

$$\frac{-2378 - j83}{0.04 + j32.83} = \frac{-2378 - j83}{32.87} = 72.35 - j2.53$$

$$I_f = 72.35 - j2.53 \times \frac{j4}{j4 + 35 + j35.71}$$

$$\frac{j4}{35 + j39.7} \times \frac{35 - j39.7}{35 - j39.7} = \frac{158.8 + j140}{1225 + 1576.09} = \frac{158.8 + j140}{2801.09}$$

$$= 0.06 + j0.05$$

$$= 0.06 + j0.05 \times 72.35 - j2.53$$

$$= 4.34 - j0.152 + j3.62 + 0.127$$

$$= 4.47 + j3.47$$

$$I_c = I_c + I_f$$

$$322 - j3.361 + 4.47 + j3.47 = \text{wrong}$$

