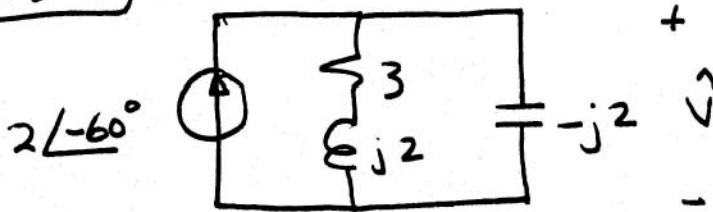


# EE 204 Home Work # 8 Solution

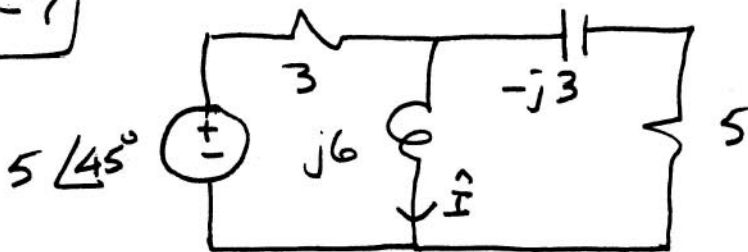
6.3-4

6.3-4



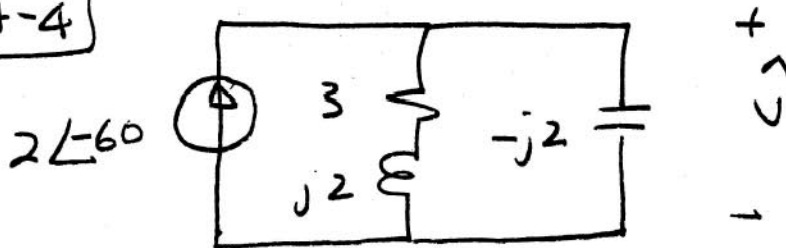
6.3-7

6.3-7



6.4-4

6.4-4



$$\frac{(3+j2)(-j2)}{3+j2-j2} = \frac{4-j6}{3} = \frac{4}{3} - j2$$

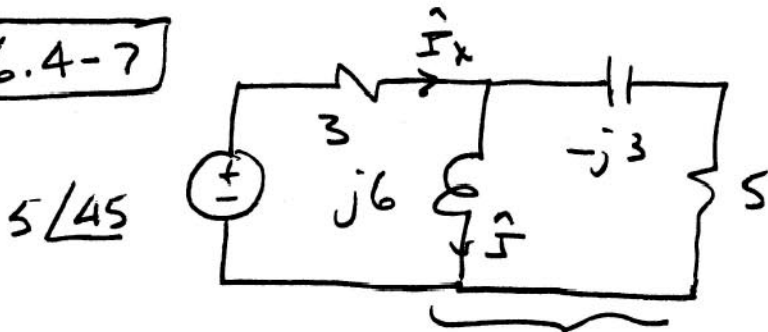
$$\hat{V} = \left(\frac{4}{3} - j2\right) 2\angle-60 = 2.4\angle-56.31 \quad 2\angle-60$$

$$= 4.81\angle-116.31^\circ$$

$$v(t) = 4.81 \sin(2t - 116.31^\circ) \text{ V}$$

6.4-7

6.4-7



$$\frac{j6(5-j3)}{j6+5-j3} = \frac{6 \angle 90^\circ \cdot 5.83 \angle -30.96^\circ}{5.83 \angle 30.96^\circ}$$

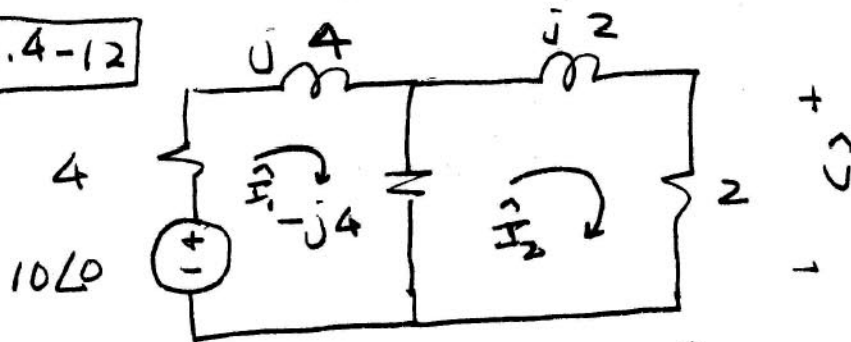
$$\hat{I}_x = \frac{5 \angle 45^\circ}{3 + 5.29 + j2.82} = 6 \angle 28.07^\circ = 5.29 + j2.82 = 0.57 \angle 26.20^\circ$$

$$\hat{I} = \frac{5-j3}{j6+5-j3} \hat{I}_x = \frac{5.83 \angle -30.96^\circ}{5.83 \angle 30.96^\circ} \hat{I}_x = 0.57 \angle -35.73^\circ$$

$$\therefore i(t) = 0.57 \cos(3t - 35.73^\circ) \text{ A}$$

6.4-12

6.4-12



$$M1: (4 + j4)\hat{I}_1 + (-j4)(\hat{I}_1 - \hat{I}_2) = 10 \angle 0$$

$$\therefore 4\hat{I}_1 + j4\hat{I}_2 = 10 \angle 0$$

$$M2: (2 + j2)\hat{I}_2 + (-j4)(\hat{I}_2 - \hat{I}_1) = 0$$

$$\therefore j4\hat{I}_1 + (2 - j2)\hat{I}_2 = 0$$

$$\hat{I}_2 = \frac{\begin{vmatrix} 4 & 10 \\ j4 & 0 \end{vmatrix}}{\begin{vmatrix} 4 & j4 \\ j4 & (2-j2) \end{vmatrix}} = \frac{-j40}{8 - j8 + 16} = \frac{40 \angle -90}{24 - j8} = 1.58 \angle -71.57^\circ$$

$$\therefore \hat{v} = 2\hat{I}_2 = 3.16 \angle -71.57^\circ$$

$$\therefore v(t) = 3.16 \cos(2t - 71.57^\circ) \text{ V}$$