

$$60 + I_{30} = V_{20} \left( \frac{1}{Z_1} + \frac{1}{Z_4} \right) + V_{30} \left( \frac{1}{Z_5} + \frac{1}{Z_3} \right)$$

$$60 + I_{30} = V_{20} \left( 0.5 - \frac{1}{j5} \right) + V_{30} \left( \frac{1}{j4} + 0.25 \right)$$

$$\textcircled{1} \quad 60 + I_{30} = V_{20} (0.5 + 0.2j) + V_{30} (0.25 - 0.25j)$$

$$\textcircled{2} \quad 20 \angle 45^\circ = V_{20} - V_{30}$$

$$\text{equation } Z \times (0.25 - 0.25j)$$

$$\text{or } 0.35 \angle -45^\circ$$

$$7 \angle 0 = V_{20} (0.25 - 0.25j) - V_{30} (0.25 - 0.25j)$$

$$I_{10} + 7$$

$$\textcircled{1} + \textcircled{2} =$$

$$67 + I_{30} = V_{20} (0.25 - 0.05j)$$

$$V_{20} = \underline{73.41} \angle \underline{24.121^\circ}$$

$$0.255 \angle -11^\circ$$

$$V_{20} = 287.88 \angle 35.121^\circ$$

$$\frac{V_{20}}{Z_4} = 57.57 \angle 125.121^\circ$$