

Chapter 10, Solution 7.

At the main node,

$$\frac{120\angle -15^\circ - V}{40 + j20} = 6\angle 30^\circ + \frac{V}{-j30} + \frac{V}{50} \longrightarrow \frac{115.91 - j31.058}{40 + j20} - 5.196 - j3 =$$
$$V\left(\frac{1}{40 + j20} + \frac{j}{30} + \frac{1}{50}\right)$$

$$V = \frac{-3.1885 - j4.7805}{0.04 + j0.0233} = \underline{124.08\angle -154^\circ \text{ V}}$$