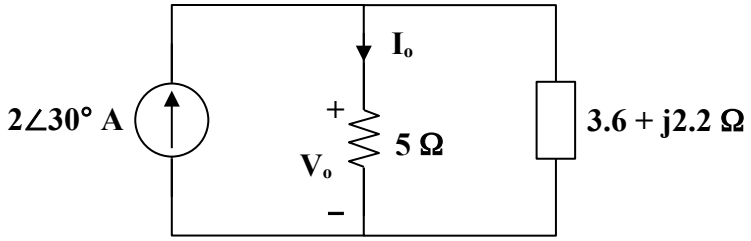
Chapter 11, Solution 56.

$$-j2 \,||\, 6 = \frac{(6)(-j2)}{6-j2} = \frac{12\angle -90^\circ}{6.32456\angle -18.435^\circ} = 1.897365\angle -71.565^\circ = 0.6 - j1.8$$

$$3 + j4 + [(-j2) \,||\, 6] = 3.6 + j2.2$$

The circuit is reduced to that shown below.



$$\mathbf{I}_o = \frac{3.6 + j2.2}{8.6 + j2.2}(2\angle 30^\circ) = \frac{4.219\angle 31.4296^\circ}{8.87694\angle 14.3493^\circ}(2\angle 30^\circ) = 0.95055\angle 47.08^\circ$$

$$\mathbf{V}_o = 5\mathbf{I}_o = 4.75275\angle 47.08^\circ$$

$$\mathbf{S} = \mathbf{V}_o \mathbf{I}_s^* = (4.75275\angle 47.08^\circ)(2\angle -30^\circ)$$

$$\mathbf{S} = 9.5055\angle 17.08^\circ = \mathbf{(9.086+j2.792)\ VA}$$