1.)   Find the average power absorbed by the 100 Ω resistor and the average power supplied by the current source for the circuit of Figure 1.

$i_s = 8 \cos(30t)$ A, $100\,\Omega$, $2H$, $\frac{1}{600}$ F

Figure 1

2.)   Find the average power absorbed by each element for the circuit of Figure 2. Check for conservation of the average power.
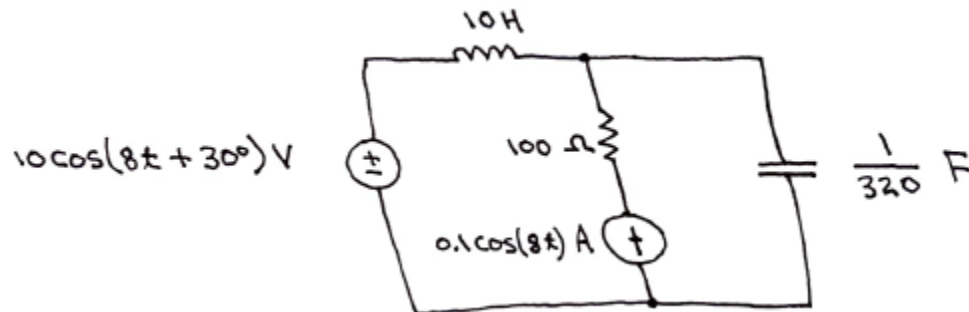

$10 \cos(8t + 30°)$ V, $10H$, $100\,\Omega$, $\frac{1}{320}$ F, $0.1\cos(8t)$ A

Figure 2

3.)   Find the rms value of the current i for (a) $i = 6 \sin 2t - 3 \cos 2t$ A, (b) $i = 2 \sin \pi t + \sqrt{2} \cos \pi t$ A, and (c) $i = 7 \cos (\sqrt{3}t) + 5\sqrt{2} \cos (2\pi t + 30°)$ A. (Hint: Use the formula for the power of a sum of sinusoids with distinct frequencies)

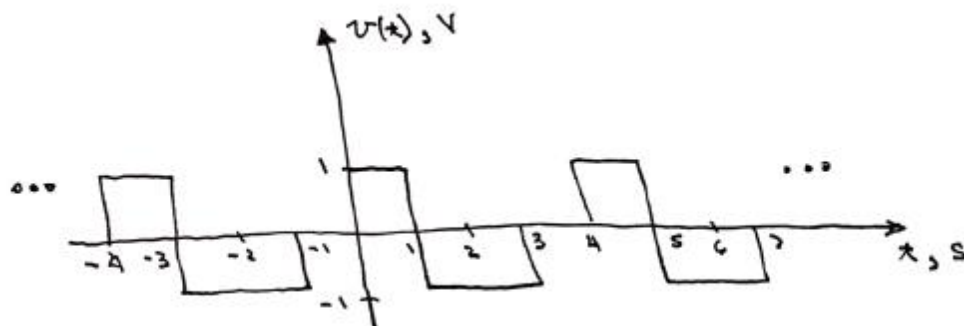**4.)**   Find the rms value of the voltage $v(t)$ shown in Figure 4.

Figure 4

5.) For the circuit shown in Figure 5, find the complex power **S** delivered by the sources and absorbed by the capacitor, inductor, and resistors. Verify conservation of complex power.
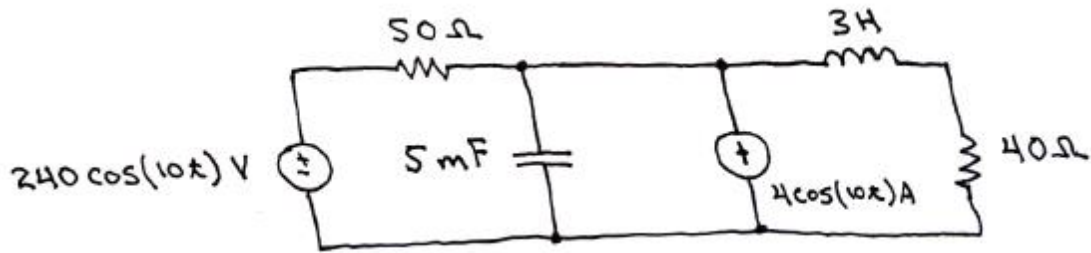

Figure 5

6.) Find the complex power delivered by the each element of the circuit of Figure 6. Verify conservation of complex power. Also, find the power factor seen by the voltage source.
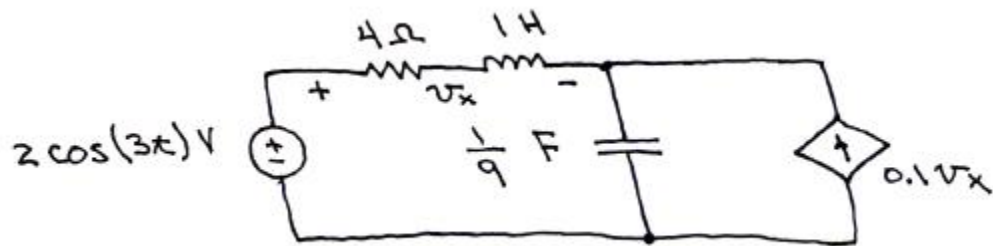

Figure 6