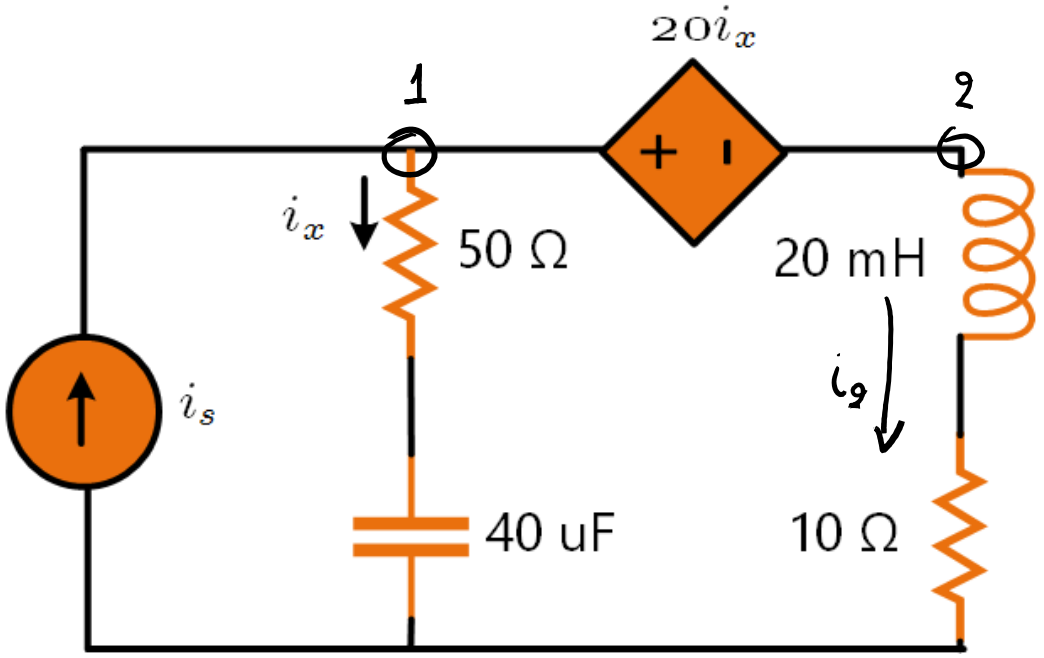

At $\omega = 10^3$ rad/sec:

$L = 20$mH $\rightarrow j\omega L = j20\Omega$

$C = 40\mu F \rightarrow \frac{1}{j\omega C} = -j25\Omega$

Nodal analysis

At node 2: $i_2 = \frac{V_2}{10+j20}$

but $V_2 = V_1 - 20i_x$

$i_2 = \frac{V_1 - 20i_x}{10+j20}$

At node 1: $\frac{V_1}{50-j25} + \frac{V_1 - 20i_x}{10+j20} = 6$

$i_x = \frac{V_1}{50-j25}$

So $V_1\left(\frac{1}{50-j25} + \frac{1}{10+j20} + \frac{1}{10+j20}\frac{20}{50-j25}\right) = 6$

$\Rightarrow V_1 = 186.05 \angle 44^\circ$ V

$\sqrt{50^2+25^2}$

As we want to calculate power $|I_x|$ is sufficient $|I_x| = \frac{186.05}{559}$

$= 3.328$ A ← amplitude not RMS

$P_{avg} = \left(\frac{3.328}{\sqrt{2}}\right)^2 \cdot 50 = 276.8$ W