ELEC 225, Fall 2011
Prof. Rich Kozick

Homework 12 Answers

Please be sure to clearly show your work in the solutions that you submit. Your approach is much more important than obtaining the correct numerical answer.

Problem 7.23: Hint: Use the identity $A\cos(\omega t + \theta) = A[\cos\omega t \cos\theta - \sin\omega t \sin\theta]$

Problem 7.25: $9.4\cos(2\pi \times 10^4 t - 21.48°)$ (mA)

Problem 7.27: (a) $(2.7 - j18.5)\ \Omega$. (c) $(69.2 - j64.4)\ \Omega$ (e) $(12.67 - j10.98)\ \Omega$.

Problem 7.31: $(2 + j3.46)\ k\Omega$.

Problem 7.34 (optional problem): Two answers are possible, and both are between 150 and 350 rad/sec (exact answer is not given here).

Problem 7.35: $\mathbf{V}_{Th} = 116.5\ \angle -22.5°$ V, $\mathbf{Z}_{Th} = (50 - j43.25)\ \Omega$. Note for part (c), you should draw the Thevenin equivalent with a sinusoidal voltage source in series with a R and C (why a C and not L?), and you should specify values for R and C.

Problem 7.37: $\mathbf{V}_{Th} = -12$ V , value of $\mathbf{Z}_{Th}$ is not given here.

Problem 7.47: $i_C(t) = 1.25\cos(400t - 6.352°)$ (A).

Problem 7.48: You should find the node voltage phasors, but the final answer should be enough for you to check your work: $\mathbf{I}_C = 17.334$ (A).

Problem 7.51 & 7.52: $1.93\ \angle 4.9°$ A

Problem 7.56: $1.8\cos(2.5\times 10^4 t + 53.13°)$ (A).