

Olin College of Engineering
ENGR2410 – Signals and Systems

Quiz 1 Solutions

Instructions

- A. Collaboration is not allowed on quizzes.
- B. Students may only use a page of notes and the tables from the website during the quizzes.
- C. Time is limited to one continuous hour.
- D. Quizzes are due at the beginning of lecture on Thursday.
- E. Late or missed quizzes will be given a score of zero. Any excuses must come directly from the Office of Student Life.
- F. The two lowest quiz scores will be eliminated to allow for unforeseeable circumstances.
- G. In case of doubt, students are expected to base their behavior on the values expressed in the Honor Code.

Name:

Start time:

Problem 1 (*4 points*) Remember that $e^{j\theta} = \cos \theta + j \sin \theta$.

A. $|e^{j\pi/2}| + |e^{j\pi}|$

B. $|e^{j\pi/2} + e^{j\pi}|$

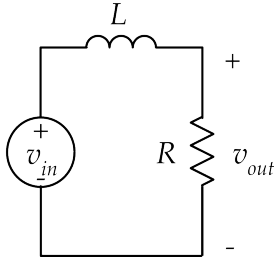
C. Write $je^{j\pi}$ in Cartesian form (i.e., $a + jb$).

D. Write j in polar form (i.e., $Ae^{j\phi}$). What is the effect of multiplying any number by j ?

Name:

Problem 2 (6 points)

- A. Write a differential equation relating v_{in} and v_{out} . Remember that for an inductor, $v_L = L \frac{di_L}{dt}$.



- B. If $v_{in} = V$ for $t > 0$, write the particular solution for v_{out} .
- C. Write the homogeneous solution for v_{out} .
- D. Write the specific solution for v_{out} assuming $v_{out}(0) = 0$.
- E. Make a clear, neat sketch of v_{out} for $t > 0$. Show the initial value, asymptote and time constant.

Course feedback

Feel free to send any additional feedback directly to us.

Name (optional):

- A. End time: How long did the quiz take you?
- B. Was the quiz a fair measure of your understanding?
- C. Was the assignment effective preparation for the quiz?
- D. Is the Monday session effective?
- E. Are the connections between lecture, assignment and quiz clear?
- F. Are the objectives of the course clear? Do you feel you are making progress towards those objectives?
- G. Anything else?

Assignment grades

Date:

Assignment number:

Group member 1:

Grade:

Group member 2:

Grade:

Group member 3:

Grade: