6.003 (Fall 2007)

Final exam *17 December 2007*

Name:

Please circle your section number:

Section	*Instructor*	*Time*
1	Jeffrey Lang	10
2	Jeffrey Lang	11
3	Karen Livescu	11
4	Sanjoy Mahajan	12
5	Antonio Torralba	1
6	Qing Hu	2

Partial credit *will* be given, according to the conceptual features that a proposed answer shares with the correct answer.

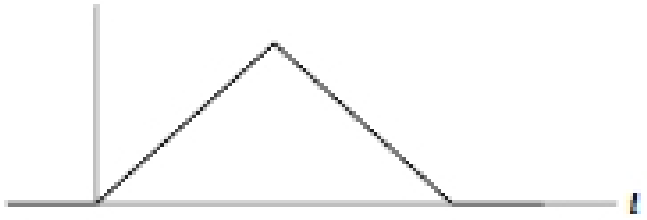
Explanations are not required and do not affect your grade.

- **You have three hours. Have fun!**
- Please put your initials on all subsequent sheets.
- Enter your answers in the boxes.
- This quiz is closed book, but you may use three 8.5 × 11 sheets of paper (six sides).
- No calculators, computers, cell phones, music players, or other aids.

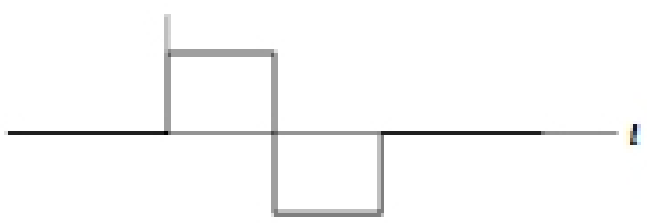
1.	/15 ( )	*5.*	/05 ( )	*9.*	/10 ( )		/ *30* ( )
2.	/05 ( )	*6.*	/10 ( )	*10.*	/10 ( )		/ *25* ( )
3.	/05 ( )	*7.*	/15 ( )	*11.*	/10 ( )	☐	/ *30* ( )
4.	/10 ( )	*8.*	/05 ( )				/ *15* ( )
	/35 ( )		/35 ( )		/30 ( )		/100 ( )

1. Matching time and frequency representations *[15 points]*

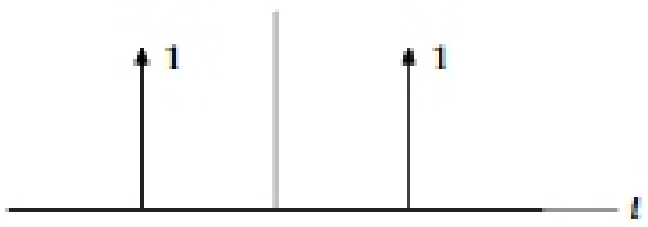
For each time signal, choose the *magnitude* of its Fourier transform from the four choices below. The time signals are zero outside the plotted region. Each time and frequency figure has its own scale, with the origin where the axes intersect. *If you are unsure of the correct answer, you can also select a second answer, in which case you will receive the average of the scores for the two answers.*



A B C D

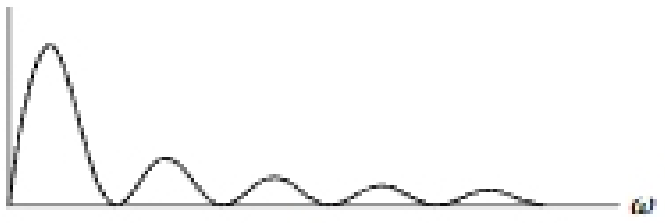


A B C D



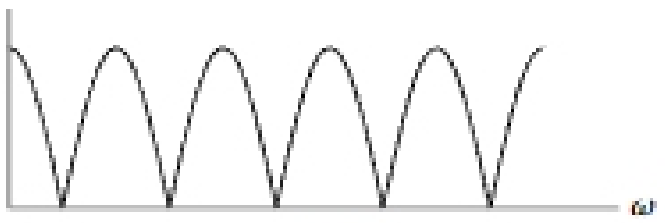
A B C D

Here are the choices for the Fourier transform magnitude:



A

B



C

D