University of Portland
School of Engineering

EE 262-Signals & Systems-3 cr. hrs.
Spring 2012

Midterm Exam # 3

(Prepared by Professor A. S. Inan)

(Friday, April 20, 2012)

Name:_____ ☺

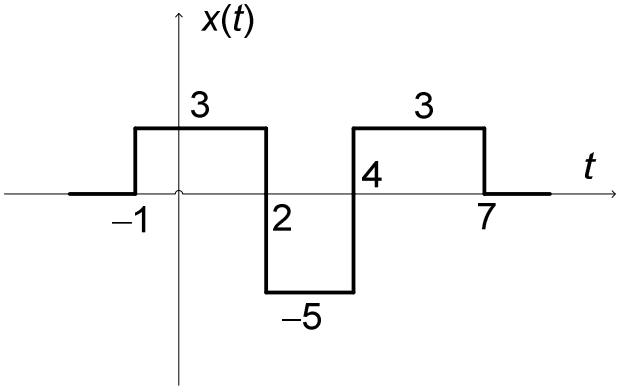
*Signature:*_____ ☺

"Honesty is the best policy."
Aesop (~ 620B.C. –?)

"An honest mind possesses a kingdom."
Lucius Annaeus Seneca (4B.C.–65A.D.)

"Honest people are the true winners of the universe."
Anonymous

(1) (25 points) Find the Fourier transform of the signal shown below. (Please present your work step by step and simplify your expressions whenever possible.)



(2) (25 points). Find the Fourier transform (FT) of the signal given by

$$x(t) = \frac{d}{dt}\left((2t+3)e^{-2t}\cos(2t)u(t-1)\right)$$

Please provide all your steps!

(3) (25 points) Find the inverse Fourier transform of $X(\omega) = \frac{4j\sin^2(3\omega)}{\omega}$ and sketch $x(t)$ as a function of time. Provide all the pertinent values on your sketch!

(4) (25 points) Find the Fourier transform of the signal given by

$$x(t) = \left[\frac{4\sin(3\pi t)}{t}\right]\left[\frac{5\sin(6t)}{3t}\right]$$