

ECE 202 (Fall 2007)  
 Homework No. 10  
 Due: Wednesday, 11/14/2007

**Instructions: Draw a box around to indicate each answer. Failure to do so will cost you 2 pts per offence.**

Total =70 pts

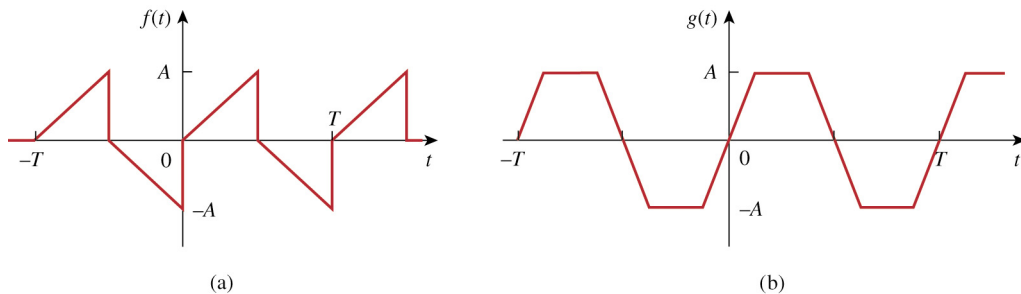
(P.1) [16 pts] Solve Problem 13-4 in text. Eliminate any sinusoidal dependence in the  $a_n$  coefficients (not for  $b_n$ 's). Clearly state for what values of  $n$  are your solutions valid.

(P.2) [29 pts] Solve Problem 13-13 in text.

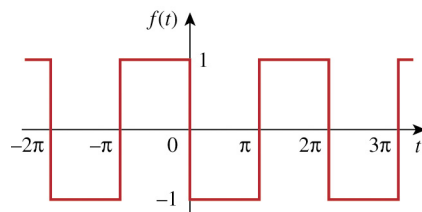
Notes:

- (i) For second part of (a), "Identify the harmonics present in the first four terms," identify the harmonic numbers, not the harmonic frequencies.)
- (ii) For part (b), identify ALL symmetry features applicable.
- (iii) For part (c), apply trigonometric identities to simply your answer into a series of 4 scaled cosines, each with zero phase.

(P.3) [6 pts] Identify all symmetry properties for the following waveforms:



(P.4) [19 pts]



- (i) [2 pts] Identify all symmetry properties for  $f(t)$ .
- (ii) [17 pts] Find the Fourier series representation of  $f(t)$  in **closed** form (i.e., the expression of  $f(t)$  should use the summation symbol and contain no " $a_n$ "s, " $b_n$ "s or ellipsis "...").