EE411 Homework 2

1) (2.6-1)Find the correlation coefficient between of signal $x(t)$ and each of the two pulses $g_1(t)$ and $g_2(t)$ shown in Fig. 1. To provide maximum margin against the noise along the transmission path, which pair of pulses would you select for a binary communication?

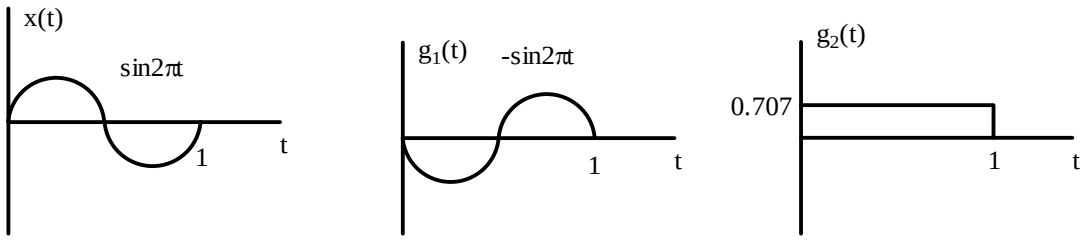

Fig. 1

2) Find the trigonometric Fourier series of the periodic signal x(t) shown in Fig. 2:

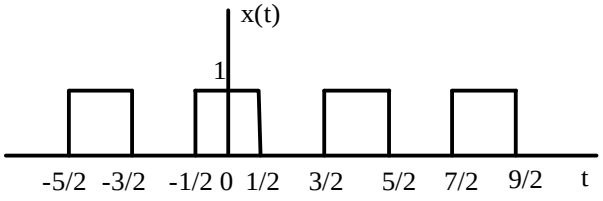

Fig. 2

3) For the periodic signal shown in Fig. 3.
   (a) find the exponential Fourier series,
   (b) find the compact trigonometric Fourier series.

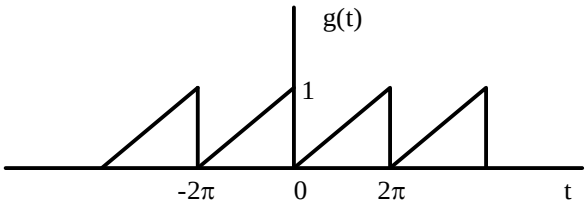

Fig. 3

(4) (2.6-3)Find the autocorrelation function of the signal $g(t) = e^{-2t}u(t)$.