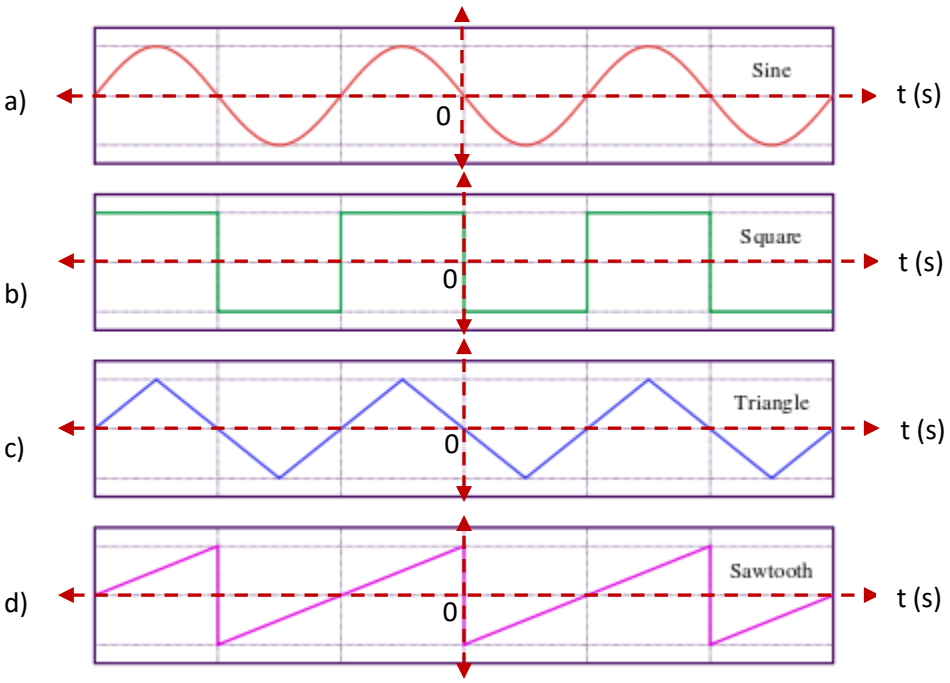
EE213 HOMEWORK

1) Find the fourier sine-cosine series expansion of the following periodic functions v(t)=v(t+p) in (-∞,∞) by assuming periods (=p) to be 1ms and amplutudes to be 1V for each waveform in the figures given below.



2) By using any computational software you learnt such as Mathematica, Matlab, etc., choose the first ten harmonics of the Fourier epansions you find in part 1 to construct these waveforms approximately. *(Copy-paste your computational codes and plots into your report).*

3) Find exponential form of the Fourier expansions of the waveforms given in part 1.

4) Study what the Parseval's theorem is, give its formal statement and proof briefley. Explain also its significance in your reports.

5) Find the fourier coefficients of any musical instrument from the internet to construct the LA- note (f=440Hz) of that instrument to play just as we do in the lectures in the classroom. *(Use at least 8 harmonics. Copy-paste your software codes and graphs into your reports)*

Attention:

1) Deadline is the beginning of the next lecture hours in the 3rd of January 2919. Later submissions will never be accepted.

2) A good news for you: Weight of this homework is 50% among your whole homeworks and I will add 40% of your homework grades to your midterm grades.

Good luck!

—C. Deniz

(27th Dec.2018)