University of Portland
School of Engineering

EE 262
Spring 2018
A. Inan

Homework # 1
(Assigned: Monday, January 15, 2018)
(Due: Monday, January 22, 2018, 9:15a.m.)

These problems are assigned from Engineering Signals and Systems in Continuous and Discrete Time Second Edition by Ulaby/Yeagle (2016) (pages 25-29):

1.4. Transformation of signals.
1.6. Transformation of signals.
1.7. Transformation of signals.
1.8. Transformation of signals.
1.12. Transformation of signals.

Inan problem # 1: Even, odd or neither?

For each signal given, determine whether the signal exhibits even symmetry, odd symmetry, or neither: (a) $x_1(t) = 2 - 7t^2 + 3t^6$; (b) $x_2(t) = 4t\left[\sin(3t) - 2t^3 + \frac{5}{t}\right]$

(c) $x_3(t) = 2t\cos(5t) + 4e^{3\sin t}$

(d) $x_4(t) = 5t\sin^2(3t) - 3\sin^3(2t)$; (e) $x_5(t) = \frac{3-\cos(4t)}{2t(t^2-5)}$

(f) $x_6(t) = 3\left(e^{2t} - e^{-2t}\right)$

Inan problem # 2: Sketching signals.

Generate plots for each of the following signals:

(a) $x_1(t) = -4r(t+1) + 6r(t) - 2r(t-3) - 2u(t-5)$

(b) $x_2(t) = 7u(t-1) - 3u(t+2) - 2u(t-3) - 2u(t-7)$

(c) $x_3(t) = 5\text{rect}\left(\frac{t+1}{6}\right) - 8\text{rect}\left(\frac{2t-3}{2}\right)$

1.26. Parts (b), (c) & (e). Determine the fundamental period.
1.29. Sampling property of impulses.
1.30. Part (c). Period of a signal.

Please use the following guidelines for your homework solutions:
1) On the first sheet, at the top center, write: Homework #1-Solutions.
2) Provide your full name on the upper right corner of the first sheet.
3) Also write: EE 262/Spring 2018 on the upper left corner of the first sheet.
4) Solve each problem on a separate sheet unless your solution is very short.
5) Box all of your answers.
6) Staple your solutions in the above order before you turn them in.

Please turn in your homework on time.