

Problem Set #2: Linear Time-Invariant Systems

These problems from Chapters 1 and 2 will acquaint you with basic properties of continuous-time and discrete-time systems. They will also deepen your understanding of the important properties of linear, time-invariant (LTI) systems, as well as sharpen your convolving skills. You'll also learn how to determine properties of LTI systems by examination of the system impulse response. The last problem about LTI systems is intended to be enlightening, and you do not have to hand it in.

Problem 1 - System Properties (20 points): 1.27(b,e) and 1.28 (c,f)

Problem 2 - Invertibility (10 points): 1.30(b,n)

Problem 3 - D.-T. Convolution (20 points): 2.21(b,d)

Problem 4 - C.-T. Convolution (20 points): 2.22(a,c)

Problem 5 - Pulse Train (10 points): 2.23(d)

Problem 6 - LTI System Properties (10 points): 2.28 (b) and 2.29 (f)

Problem 7 - LTI Systems and Difference Equations (10 points): 2.30

More on LTI Systems (Think about but do not hand in.): 2.48