

Practice Problems II - 04

Practice problems are supposed to help you digest the content of the lecture. It is important that you manage to solve them on your own. Before you write your solutions, you may of course ask questions, and discuss things. In order to prepare for the exam, already now, try to explicitly write down your solutions – clearly and easy to read. Apply definitions properly, and give explanations for what you are doing. That will help you to understand them later when you prepare for the final exam.

I. Transfer Functions - Stability

Consider the following transfer functions, and check them for the BIBO property.

a) $H(s) = \frac{1}{s+1}$

b) $H(s) = \frac{1}{s-1}$

c) $H(s) = \frac{1}{(s+1)(s-1)}$

d) $H(s) = \frac{1}{s^2+3}$

e) $H(s) = \frac{1}{s^2+7s+3}$

f) $H(s) = \frac{1}{s^3+s^2+7s+3}$

g) $H(s) = \frac{1}{s^4+s^3+s^2+2s+3}$

h) $H(s) = \frac{1}{s^4+s^3+2s+3}$

i) $H(s) = \frac{1}{s^4-s^3+2s+3}$

j) $H(s) = \frac{1}{s^4+s^3+s^2+2s}$