

HW1

1) Given the following system.

$$a\dot{x}(t) = \sin(t)$$

where a is the last number of your student ID plus 1.

Is the system above a linear system? Prove your answer. Give a mathematical proof on a piece of paper that it does meet the superposition theorem.

2) Write a **MATLAB Simulink program** to show that the system below is a time-variant system. This has been demonstrated during the class with a different system. Please, watch again the video lecture.

$$\ddot{y}(t) + \dot{y}(t) = \sqrt{t} au(t) + \dot{u}(t)$$

where a is the last number of your student ID plus 1.

Please, submit a decent report. Sub-decent submission will not receive a full grade.