Homework 2 in EL2450 Hybrid and Embedded Control Systems

First Name 1 Last Name 1
Personal Number 1
E-mail 1

First Name 2 Last Name 2
Personal Number 2
E-mail 2

January 29, 2020

Instructions and Help

Please remove this part and the sample references before submitting your homework.

Read the general homework instructions available on the course homepage before starting to write the report.

Here are some additional guidelines how to write a homework report.

- Try, if possible, to work in teams of two students. The workload of the homework is for two students.
- Fill in name and personal number of all group members.
- Do not modify this template. Just write names, e-mails, personal numbers and answer the tasks below.
- Do not copy the task descriptions and use the structure below.
- Motivate your answers well and how you derived them, but be concise.
- The number of points is not necessarily related to much you need to write for task.
- Put references in the end if any.
- Do not include plots from the Simulink scope (color on black background) but export the data to Matlab for plotting.
- There is plenty of material available how to use Latex. Use a search engine of your choice to learn more.

Here are some examples how to use Latex:

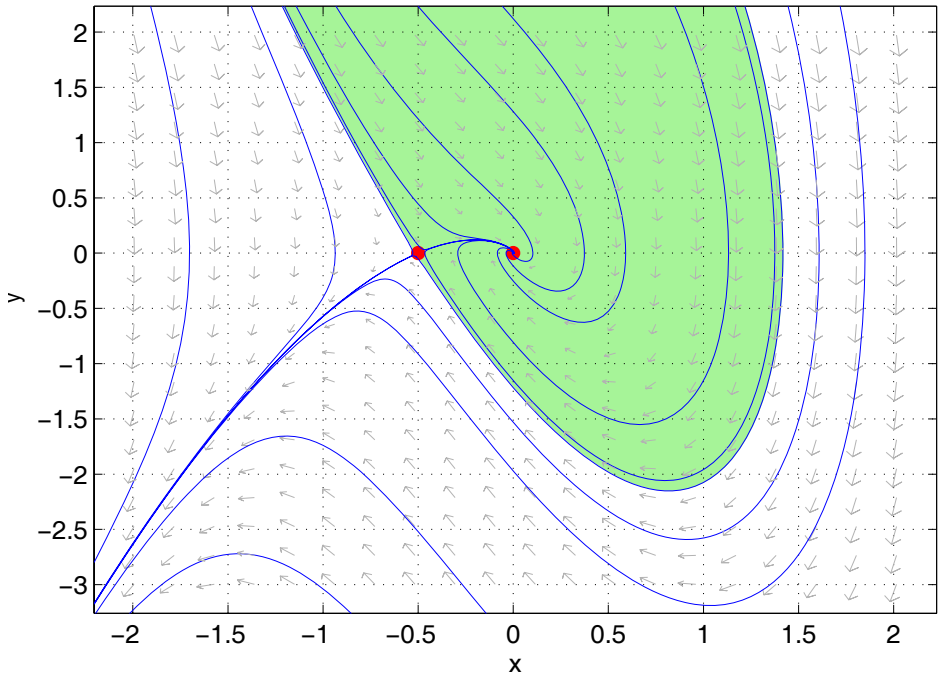
- An equation with a reference (**??**) to it

$$\dot{x} = \frac{3}{4}x. \tag{1}$$

- A multi-line equations with a reference to it

$$\hat{x} = x - y$$
$$\alpha = x + \gamma.$$

- An equation in text: $\Phi = \int_0^h \mathrm{e}^{A\tau} d\tau$.
- An image



- A table

−2.46	0	−1.73	0
0	−2.553	0	2.774
0	6.172	−10	7.333
1.767	−0.357	5.714	−6.074

- A citation [**?**]
- Display something exactly as it is written: `\frac{1}{2}_`
- Basic formating: **bold**, *italics*, `typewriter`

Task 1

Solution to the task

Task 2

Solution to the task

Task 3

Solution to the task

Task 4

Solution to the task

Task 5

Solution to the task

Task 6

Solution to the task

Task 7

Solution to the task

Task 8

Solution to the task

Task 9

Solution to the task

Task 10

Solution to the task

Task 11

Solution to the task

Task 12

Solution to the task

Task 13

Solution to the task

Task 14

Solution to the task

Task 15

Solution to the task

Task 16

Solution to the task

Task 17

Solution to the task

References

[] Hassan K Khalil. *Nonlinear systems*. Prentice Hall, Upper Saddle river, 3. edition, 2002. ISBN 0-13-067389-7.

[] Tobias Oetiker, Hubert Partl, Irene Hyna, and Elisabeth Schlegl. *The Not So Short Introduction to LaTeX 2ε*. Oetiker, OETIKER+PARTNER AG, Aarweg 15, 4600 Olten, Switzerland, 2008. http://www.ctan.org/info/lshort/.

[] Shankar Sastry. *Nonlinear systems: analysis, stability, and control*, volume 10. Springer, New York, N.Y., 1999. ISBN 0-387-98513-1.