Exercise 2.1: Backpropagation

Upload the modified file `backprop_functions.py` to moodle by noon on 16.10.2019
and provide your name, student ID and email address as comment at the top of the file.

Please download and unzip the corresponding source files, which contain all implementations, the test cases as well as the documentation.
You should start by **opening the documentation**. Therefore, you have to open the file `docs/index.html` in your webbrowser.
Furthermore, you have to **setup your Python environment**. You can do so manually (e.g., by installing all missing packages) or use the conda environment that we provide with the file `tutorial3_env.yml`. The provided conda environment can be installed via[1]

```
$ conda env create -f tutorial2_env.yml
$ conda activate tutorial2_env
```

The goal of this exercise is to implement the missing code in the `forward()` and `backward()` functions in module `lib/backprop_functions.py`.
The corresponding computational rules were derived in the tutorial session and are described in the documentation (that you opened in your webbrowser).
To be precise, the following methods have to be implemented:

- `lib.backprop_functions.LinearFunction.forward()`
- `lib.backprop_functions.LinearFunction.backward()`
- `lib.backprop_functions.SigmoidFunction.forward()`
- `lib.backprop_functions.SigmoidFunction.backward()`
- `lib.backprop_functions.MSELossFunction.forward()`
- `lib.backprop_functions.MSELossFunction.backward()`

The documentation describes how you can automatically test your implementation. The instructors have a very similar withhold set of private test cases that are used to grade the exercise.

The second part of this exercise (exercise sheet 2.2) will be released before the lecture next week.

[1] See here for more details: `https://docs.conda.io/projects/conda/en/latest/user-guide/tasks/manage-environments.html#creating-an-environment-from-an-environment-yml-file`