# Training Assignment 11

NUMA01: Computational Programming with Python

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The purpose of this training exercise is to work with object oriented techniques in plotting.
This assignment has 11 tasks.

## Warming-up Exercises

### Task 1

Obtain the `mandelbrot` function code from the course book Chapter 6 – Plotting and create the same plot as in the book. While there glance through the chapter.

### Task 2

Change the color map for the plot. Potential color maps can be obtained by

```
from matplotlib import colormaps
print(colormaps)
```

## Exercises

We imagine that we are in a teaching situation and want to demonstrate properties of a polynomial.

### Task 3

Choose a polynomial of degree 3 and plot it together with its first derivative.

### Task 4

Plot a tangent segment to this curve at its inflection point(s).

## Task 5

Do the same for its extremal values.

## Task 6

Make the tangents a small, black, dotted line.

## Task 7

Make the polynomial curve thicker than its derivative.

## Task 8

Add annotations.

## Task 9

Put only the $x$ and $y$ coordinate of these points as tick labels.

## Task 10

Give the figure a title.

## Task 11

Save it as a png file.