

Mathematics 2023/24, Homework 4
bonus: 2 points, deadline: December 8, 2023

1. For the following functions find intervals of monotonicity (intervals where the function is increasing and decreasing) and find local extrema.

(a) $y = x^4 + 2x^3$.

(b) $y = \frac{x^2}{x-2}$, where $y' = \frac{x^2 - 4x}{(x-2)^2}$

2. For the following functions find intervals of concavity (intervals where the function is concave up and concave down) and find points of inflection.

(a) $y = 4x^3 - x^4$.

(b) $y = x^3 - 2x^2 + x$.

Instructions for writing homework:

- Write your homework with solution (not only the results).
- Take a photo of the homework and convert the picture to PDF (use <https://tools.pdf24.org/en/jpg-to-pdf>).
- Compress the file if it is large (use <https://tools.pdf24.org/en/compress-pdf>).
- Send the final PDF file to the teacher (either e-mail: fisnarov@mendelu.cz or chat in MS Teams).