Mathematics 2023/24, Homework 3
bonus: 2 points, deadline: November 24, 2023

1. Solve the equations

   (a) $\ln x = 5$

   (b) $e^x = 9$

2. Write the definition of the derivative of a function f at the point x_0.

3. Find derivatives of the following functions

   (a) $y = x^5 - 3x^4 + 5x^3 + x^2 - 7x + 2$

   (b) $y = \dfrac{1}{x^3} - \dfrac{1}{\sqrt{x}}$

   (c) $y = x^3 \ln x$

   (d) $y = \dfrac{x^3}{x^2 + 1}$

   (e) $y = \cos(\ln x^2)$

   (f) $y = (x^2 + 5x - 1)^4$

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).