Exercise 1. Practise integrating with the Integral Trainer. The aim is for you to be able to calculate integrals quickly and reliably, especially using partial integration and substitution. As an indication of the expected difficulty for the exam, consider Exercise 2.

Exercise 2. (Old Exam Exercise: only the answer was assessed) Please note that this was only one of several computation exercises in the exam. You should be able to solve it reasonably fast.

1. Calculate the indefinite integral $\int x^2 \cos x dx$.
2. Calculate the integral $\int_1^4 \frac{\exp(\sqrt{t}+1)}{\sqrt{t}} dt$.
3. Calculate the indefinite integral $\int \frac{1}{t^{2/3}+t^{1/2}} dt$ on $\mathbb{R}_{>0}$.

Exercise 3. (Easy) Calculate the Taylor approximations of the following functions at $x = 0$ up to fourth order. Specify the error terms and the little-o or big-O notation exactly.

a) $f(x) = \frac{1}{1-x}$

b) $f(x) = \sin(x)$

c) $f(x) = \log(1 + x)$