Mathematical analysis I — Replacement homework

Due: at least 5 days before you want to attend the exam, on 12.6. latest.

Mark from submitted homework will replace your lowest score (if higher) from the respective homeworks.

Problem 1: Replacement for homework 1-4. Find a primitive function corresponding to the function $|e^x \sin x|$ on **the whole** $\mathbb{R}$.

Problem 2: Replacement for homework 5-7. Determine volume of the body between paraboloids $z = x^2 + 2y^2$ and $z = 12 - 2x^2 - y^2$. You can use computer to calculate necessary single variable integral.

Problem 3: Replacement for homework 8-11. Prove that there is a neighborhood V of the point $(3, -2, 2)$ such that the set $\{(x, y, z) \in V | z^3 - xz + y = 0\}$ is a graph of a function $z = z(x, y)$ and find a tangent plane to the graph of this function at $(3, -2, 2)$.