

N. 10

1. (3 points) Calculate the limit $\lim_{x \rightarrow 0} \left(\ln(1 + x^2) \right)^{\arcsin x}$.
2. (3 points) Find the integral $\int \frac{x^3 + 1}{x^4 - 3x^2 - 4} dx$.
3. (3 points) Calculate the definite integral $\int_0^1 \frac{1}{\sqrt{x} + \sqrt[3]{x}} dx$.
4. (3 points) Find the surface area of the body obtained by revolution of the curve $y = e^x, x \in [0, 1]$ around the Ox axis.