

N. 8

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