

## N. 7

1. (3 points) Calculate the limit  $\lim_{x \rightarrow 0} \frac{\ln(1-x) + \operatorname{arctg} x}{x^2}$ .
2. (3 points) Find the integral  $\int \frac{\operatorname{arctg} e^x}{e^x} dx$ .
3. (3 points) Calculate the definite integral  $\int_0^{\frac{1}{16}} \frac{1}{\sqrt{x} - \sqrt[4]{x}} dx$ .
4. (3 points) Find the surface area of the body obtained by revolution of the curve  $x^{2/3} + y^{2/3} = 1$  around the  $Oy$  axis.