

### N. 3

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.