

## N. 16

1. (3 points) Calculate the limit  $\lim_{x \rightarrow 0} \frac{\ln \sqrt{1+x^2} + \cos x - 1}{x^4}$ .
2. (3 points) Find the integral  $\int \frac{\arcsin x}{\sqrt{1+x}} dx$ .
3. (3 points) Calculate the definite integral  $\int_0^{\frac{\pi}{2}} \sin x \cos 2x dx$ .
4. (3 points) Find the volume of the body obtained by revolution around the  $Oy$  axis of the domain bounded by the curves  $y = \cos x$  and  $y = 1 - \frac{2x}{\pi}$  ( $0 \leq x \leq \frac{\pi}{2}$ ).