N. 13

1. (3 points) Calculate the limit $\lim\limits_{x\to 0}\left(\dfrac{1}{x\sin x}-\dfrac{1}{\ln^2(1+x)}\right)$.

2. (3 points) Find the integral $\displaystyle\int \dfrac{2x+1}{x^4+3x^2+2}\,dx$.

3. (3 points) Calculate the definite integral $\displaystyle\int_0^1 \dfrac{x}{\sqrt[3]{x^2(1-x)}}\,dx$.

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.