

Matematička analiza 1 - 21. auditorna vježba - 8.1.2024.

Zadatak 1 Pomoću određenog integrala nađite limese

(a)

$$\lim_{n \rightarrow \infty} \left(\frac{1}{n^2} + \frac{2}{n^2} + \dots + \frac{n}{n^2} \right) = \lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{i}{n^2},$$

(b)

$$\lim_{n \rightarrow \infty} \left(\frac{1}{n+1} + \frac{1}{n+2} + \dots + \frac{1}{n+n} \right) = \lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{1}{n+i}.$$

Zadatak 2 Nađite lokalne ekstreme funkcija zadanih integralom

(a) $F(x) = \int_0^x \cos(t) dt,$

(b) $G(x) = \int_0^x \cos(t^2) dt.$

Zadatak 3 Izračunajte:

(a) $\int_e^{e^2} \frac{dx}{x \ln^5(x)},$

(b) $\int_{\frac{1}{2\pi}}^{\frac{1}{\pi}} \frac{1}{x^2} \sin\left(\frac{1}{x}\right) dx.$

Zadatak 4 Izračunajte:

(a) $\int_1^3 \frac{dx}{(1+x)\sqrt{x}},$

(b) $\int_{\frac{1}{2}}^{\frac{\sqrt{3}}{2}} \frac{dx}{\arcsin(x)\sqrt{1-x^2}},$

(c) $\int_0^2 x^3 \sqrt{2x^2+1} dx.$