

ANALIZA 2

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Wykładowca: Jarosław Wróblewski

W każdym zadaniu za 0, 1, 2, 3, 4 poprawne odpowiedzi otrzymuje się odpowiednio 0, 1, 3, 6, 10 punktów.

Zadania **11 i 12** to zadania dodatkowe (niezbyt trudne, ale wymagające sprawnego zapanowania nad rachunkami).

Podczas testu nie wolno korzystać z kalkulatorów.

Odpowiedzi należy podawać w postaci uproszczonej.

Pisz czytelnie !!!

1. a) $\int x \cdot (2x^2 + 1)^4 dx = \dots\dots\dots$

b) $\int x \cdot (3x^2 + 2)^5 dx = \dots\dots\dots$

c) $\int x \cdot (4x^2 + 3)^6 dx = \dots\dots\dots$

d) $\int x \cdot (5x^2 + 4)^7 dx = \dots\dots\dots$

2. a) $\int \frac{x^5 dx}{(x^6 + 1)^5} = \dots\dots\dots$

b) $\int \frac{x^4 dx}{(x^5 + 1)^4} = \dots\dots\dots$

c) $\int \frac{x^3 dx}{(x^4 + 1)^3} = \dots\dots\dots$

d) $\int \frac{x^2 dx}{(x^3 + 1)^2} = \dots\dots\dots$

3. a) $\int \frac{x^4 dx}{x^5 + 1} = \dots\dots\dots$

b) $\int \frac{x^9 dx}{x^{10} + 1} = \dots\dots\dots$

c) $\int \frac{x^{19} dx}{x^{20} + 1} = \dots\dots\dots$

d) $\int \frac{x^{39} dx}{x^{40} + 1} = \dots\dots\dots$

4. a) $\int \frac{x^{39} dx}{x^{80} + 1} = \dots\dots\dots$

b) $\int \frac{x^{19} dx}{x^{40} + 1} = \dots\dots\dots$

c) $\int \frac{x^9 dx}{x^{20} + 1} = \dots\dots\dots$

d) $\int \frac{x^4 dx}{x^{10} + 1} = \dots\dots\dots$

5. a) $\int x^2 \cdot \sqrt{x^3 + 1} dx = \dots\dots\dots$

b) $\int x \cdot \sqrt{x^2 + 1} dx = \dots\dots\dots$

c) $\int x^4 \cdot \sqrt{x^5 + 1} dx = \dots\dots\dots$

d) $\int x^3 \cdot \sqrt{x^4 + 1} dx = \dots\dots\dots$

6. a) $\int \frac{x^4 dx}{\sqrt[8]{x^5 + 1}} = \dots\dots\dots$

b) $\int \frac{x dx}{\sqrt{x^2 + 1}} = \dots\dots\dots$

c) $\int \frac{x^2 dx}{\sqrt[4]{x^3 + 1}} = \dots\dots\dots$

d) $\int \frac{x^3 dx}{\sqrt[6]{x^4 + 1}} = \dots\dots\dots$

7. a) $\int \sqrt[3]{x^5 + x^3} dx = \dots\dots\dots$

b) $\int \sqrt[3]{x^9 + x^6} dx = \dots\dots\dots$

c) $\int \sqrt[3]{x^{13} + x^9} dx = \dots\dots\dots$

d) $\int \sqrt[3]{x^{17} + x^{12}} dx = \dots\dots\dots$

8. a) $\int \sqrt[5]{x^{25} + x^{20}} dx = \dots\dots\dots$

b) $\int \sqrt[5]{x^{19} + x^{15}} dx = \dots\dots\dots$

c) $\int \sqrt[5]{x^{13} + x^{10}} dx = \dots\dots\dots$

d) $\int \sqrt[5]{x^7 + x^5} dx = \dots\dots\dots$

9. a) $\int \frac{(\ln x)^2 dx}{x} = \dots\dots\dots$

b) $\int \frac{\ln x dx}{x} = \dots\dots\dots$

c) $\int \frac{(\operatorname{arctg} x)^2 dx}{x^2 + 1} = \dots\dots\dots$

d) $\int \frac{\operatorname{arctg} x dx}{x^2 + 1} = \dots\dots\dots$

10. a) $\int \sqrt[3]{x} \cdot \ln x dx = \dots\dots\dots$

b) $\int x^2 \cdot \ln x dx = \dots\dots\dots$

c) $\int x^3 \cdot \ln x dx = \dots\dots\dots$

d) $\int \sqrt{x} \cdot \ln x dx = \dots\dots\dots$

11. a) $\int x \cdot \sqrt{x+1} dx = \dots\dots\dots$

b) $\int x \cdot \sqrt[3]{x+1} dx = \dots\dots\dots$

c) $\int x \cdot \sqrt[4]{x+1} dx = \dots\dots\dots$

d) $\int x \cdot \sqrt[5]{x+1} dx = \dots\dots\dots$

12. a) $\int \frac{x dx}{\sqrt[5]{x+1}} = \dots\dots\dots$

b) $\int \frac{x dx}{\sqrt[4]{x+1}} = \dots\dots\dots$

c) $\int \frac{x dx}{\sqrt[3]{x+1}} = \dots\dots\dots$

d) $\int \frac{x dx}{\sqrt{x+1}} = \dots\dots\dots$