

Kolokwium 3 (AM2 22/23)

Wersja testu **A** 30 marca 2023 r.

1. Podaj wartość całki oznaczonej.

a) $\int_{-1}^3 |x| dx = \dots\dots\dots$

b) $\int_{-1}^5 |x| dx = \dots\dots\dots$

c) $\int_{-1}^7 |x| dx = \dots\dots\dots$

d) $\int_{-1}^9 |x| dx = \dots\dots\dots$

2. Podaj wartość całki oznaczonej.

a) $\int_{-4}^5 3 \cdot x \cdot |x| dx = \dots\dots\dots$

b) $\int_{-3}^4 3 \cdot x \cdot |x| dx = \dots\dots\dots$

c) $\int_{-2}^3 3 \cdot x \cdot |x| dx = \dots\dots\dots$

d) $\int_{-1}^2 3 \cdot x \cdot |x| dx = \dots\dots\dots$

3. Podaj wartość całki oznaczonej.

a) $\int_0^4 \frac{dx}{\sqrt{12x+1}} = \dots\dots\dots$

b) $\int_0^6 \frac{dx}{\sqrt{8x+1}} = \dots\dots\dots$

c) $\int_0^2 \frac{dx}{\sqrt{24x+1}} = \dots\dots\dots$

d) $\int_0^3 \frac{dx}{\sqrt{16x+1}} = \dots\dots\dots$

4. Podaj wartość całki oznaczonej.

a) $\int_0^3 \frac{dx}{\sqrt[3]{21x+1}} = \dots\dots\dots$

b) $\int_0^{21} \frac{dx}{\sqrt[3]{3x+1}} = \dots\dots\dots$

c) $\int_0^9 \frac{dx}{\sqrt[3]{7x+1}} = \dots\dots\dots$

d) $\int_0^7 \frac{dx}{\sqrt[3]{9x+1}} = \dots\dots\dots$

5. Podaj wartość całki oznaczonej.

a) $\int_0^1 \frac{x^4 dx}{x^5 + 1} = \dots\dots\dots$

b) $\int_0^1 \frac{x^{19} dx}{x^{20} + 1} = \dots\dots\dots$

c) $\int_0^1 \frac{x^9 dx}{x^{10} + 1} = \dots\dots\dots$

d) $\int_0^1 \frac{x^{39} dx}{x^{40} + 1} = \dots\dots\dots$

6. Podaj wartość całki oznaczonej.

a) $\int_0^1 \frac{x^{39} dx}{x^{80} + 1} = \dots\dots\dots$

b) $\int_0^1 \frac{x^{19} dx}{x^{40} + 1} = \dots\dots\dots$

c) $\int_0^1 \frac{x^4 dx}{x^{10} + 1} = \dots\dots\dots$

d) $\int_0^1 \frac{x^9 dx}{x^{20} + 1} = \dots\dots\dots$

7. Podaj wartość całki oznaczonej w postaci $\ln \frac{m}{n}$, $\text{NWD}(m, n) = 1$.

a) $\int_1^3 \frac{dx}{x^2 + x} = \dots\dots\dots$

b) $\int_2^5 \frac{dx}{x^2 + x} = \dots\dots\dots$

c) $\int_3^6 \frac{dx}{x^2 + x} = \dots\dots\dots$

d) $\int_4^8 \frac{dx}{x^2 + x} = \dots\dots\dots$

8. Podaj wartość całki oznaczonej w postaci $m + n \cdot \ln 2$, $m, n \in \mathbb{Z}$.

a) $\int_8^{16} \ln x dx = \dots\dots\dots$

b) $\int_4^8 \ln x dx = \dots\dots\dots$

c) $\int_2^4 \ln x dx = \dots\dots\dots$

d) $\int_1^2 \ln x dx = \dots\dots\dots$

9. Podaj wartość całki oznaczonej.

a) $\int_{-9}^0 \sqrt{81-x^2} dx = \dots\dots\dots$

b) $\int_0^{10} \sqrt{100-x^2} dx = \dots\dots\dots$

c) $\int_0^6 \sqrt{36-x^2} dx = \dots\dots\dots$

d) $\int_{-7}^7 \sqrt{49-x^2} dx = \dots\dots\dots$

10. Podaj wartość całki oznaczonej.

a) $\int_0^{10} \sqrt{400-x^2} dx = \dots\dots\dots$

b) $\int_0^{10} \sqrt{200-x^2} dx = \dots\dots\dots$

c) $\int_0^6 \sqrt{72-x^2} dx = \dots\dots\dots$

d) $\int_0^6 \sqrt{48-x^2} dx = \dots\dots\dots$

11. (ZAD. DODATKOWE) Podaj wartość całki oznaczonej.

a) $\int_0^{10} \sqrt{10x-x^2} dx = \dots\dots\dots$

b) $\int_0^6 \sqrt{12x-x^2} dx = \dots\dots\dots$

c) $\int_{10}^{20} \sqrt{20x-x^2} dx = \dots\dots\dots$

d) $\int_0^6 \sqrt{6x-x^2} dx = \dots\dots\dots$

12. (ZAD. DODATKOWE) Podaj wartość całki oznaczonej.

a) $\int_0^3 \sqrt{24-2x^2} dx = \dots\dots\dots$

b) $\int_0^3 \sqrt{36-2x^2} dx = \dots\dots\dots$

c) $\int_0^3 \sqrt{72-2x^2} dx = \dots\dots\dots$

d) $\int_0^3 \sqrt{18-2x^2} dx = \dots\dots\dots$