

# Seminari 3

## MATEMATIKA ZA EKONOMISTE 2

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FOI, Varaždin

# Sadržaj

prvi zadatak

drugi zadatak

treći zadatak

četvrti zadatak

Diferencijal realne funkcije jedne realne varijable

peti zadatak

šesti zadatak

sedmi zadatak

osmi zadatak

deveti zadatak

Napomena za logaritamsku funkciju

deseti zadatak

jedanaesti zadatak

dvanaesti zadatak

trinaesti zadatak

četrnaesti zadatak

**prvi zadatak**

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## Zadatak 1

Riješite neodređeni integral  $\int \frac{dx}{\sqrt[4]{x^3}}$ .

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## Rješenje

$$\int \frac{dx}{\sqrt[4]{x^3}} =$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\sqrt[n]{x^m} = x^{\frac{m}{n}}$$

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Riješite neodređeni integral  $\int \frac{dx}{\sqrt[4]{x^3}}$ .

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## **drugi zadatak**

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## Zadatak 2

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$$\int \frac{(x-3)^2}{x^5} dx = \int \frac{x^2 - 6x}{x^5}$$

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## Rješenje

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## treći zadatak

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### Zadatak 3

*Riješite neodređeni integral  $\int (5e^x - 3 \sin x) dx$ .*

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Riješite neodređeni integral  $\int (5e^x - 3 \sin x) dx$ .

### Rješenje

$$\int (5e^x - 3 \sin x) dx =$$

$$\int e^x dx = e^x + C$$

$$\int \sin x dx = -\cos x + C$$

### Zadatak 3

Riješite neodređeni integral  $\int (5e^x - 3 \sin x) dx$ .

### Rješenje

$$\int (5e^x - 3 \sin x) dx = 5 \int e^x dx$$

$$\int e^x dx = e^x + C$$

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### Zadatak 3

Riješite neodređeni integral  $\int (5e^x - 3 \sin x) dx$ .

### Rješenje

$$\begin{aligned}\int (5e^x - 3 \sin x) dx &= 5 \int e^x dx - 3 \int \sin x dx = \\ &= 5\end{aligned}$$

$$\int e^x dx = e^x + C$$

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### Rješenje

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$$\int e^x dx = e^x + C$$

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$$\begin{aligned}\int (5e^x - 3 \sin x) dx &= 5 \int e^x dx - 3 \int \sin x dx = \\ &= 5e^x - 3 \cdot (-\cos x) + C = \\ &= 5e^x + 3 \cos x + C\end{aligned}$$

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$$\int e^x dx = e^x + C$$

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## čtvrti zadatak

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## Zadatak 4

Riješite neodređeni integral  $\int 3^x e^x dx$ .

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Riješite neodređeni integral  $\int 3^x e^x dx$ .

## Rješenje

$$\int 3^x e^x dx =$$

$$(ab)^n = a^n b^n$$

## Zadatak 4

Riješite neodređeni integral  $\int 3^x e^x dx$ .

## Rješenje

$$\int 3^x e^x dx = \int (3e)^x dx$$

$$(ab)^n = a^n b^n$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 4

Riješite neodređeni integral  $\int 3^x e^x dx$ .

## Rješenje

$$\int 3^x e^x dx = \int (3e)^x dx = \frac{(3e)^x}{\ln(3e)}$$

$$(ab)^n = a^n b^n$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 4

Riješite neodređeni integral  $\int 3^x e^x dx$ .

## Rješenje

$$\int 3^x e^x dx = \int (3e)^x dx = \frac{(3e)^x}{\ln(3e)} + C$$

$$(ab)^n = a^n b^n$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 4

Riješite neodređeni integral  $\int 3^x e^x dx$ .

## Rješenje

$$\int 3^x e^x dx = \int (3e)^x dx = \frac{(3e)^x}{\ln(3e)} + C, \quad C \in \mathbb{R}$$

$$(ab)^n = a^n b^n$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

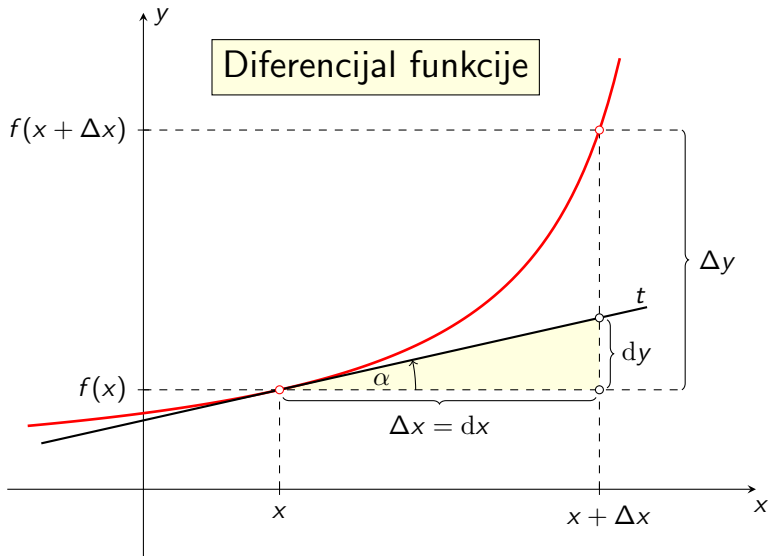
$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$



# Diferencijal realne funkcije jedne realne varijable

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## Diferencijal funkcije



$$y = f(x), \quad f'(x) = \operatorname{tg} \alpha = \frac{dy}{dx}, \quad dy = f'(x) dx$$

**peti zadatak**

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## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\int (3 - 2x)^8 dx =$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\int (3 - 2x)^8 dx = \left[ \begin{array}{l} 3 - 2x = t \end{array} \right.$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\int (3 - 2x)^8 dx = \left[ 3 - 2x = t \right]'$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{aligned} t &= f(x) \\ dt &= f'(x) dx \end{aligned}$$

## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\int (3 - 2x)^8 dx = \left[ \begin{array}{l} 3 - 2x = t \\ -2 \end{array} \right]$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{array}{l} t = f(x) \\ dt = f'(x) dx \end{array}$$



## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\int (3 - 2x)^8 dx = \left[ \begin{array}{l} 3 - 2x = t \\ -2 dx \end{array} \right]$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{array}{l} t = f(x) \\ dt = f'(x) dx \end{array}$$

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## Rješenje

$$\int (3 - 2x)^8 dx = \left[ \begin{array}{l} 3 - 2x = t / ' \\ -2 dx = \end{array} \right.$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{array}{l} t = f(x) \\ dt = f'(x) dx \end{array}$$

## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\int (3 - 2x)^8 dx = \left[ \begin{array}{l} 3 - 2x = t / ' \\ -2 dx = dt \end{array} \right.$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

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Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\int (3 - 2x)^8 dx = \left[ \begin{array}{l} 3 - 2x = t / ' \\ -2 dx = dt \end{array} \right] = \int$$

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Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

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$$\int (3 - 2x)^8 dx = \left[ \begin{array}{l} 3 - 2x = t / ' \\ -2 dx = dt \end{array} \right] = \int t^8$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{array}{l} t = f(x) \\ dt = f'(x) dx \end{array}$$

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Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\int (3 - 2x)^8 dx = \left[ \begin{array}{l} 3 - 2x = t / ' \\ -2 dx = dt \end{array} \right] = \int t^8.$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

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## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\int (3 - 2x)^8 dx = \left[ \begin{array}{l} 3 - 2x = t \\ -2 dx = dt \end{array} \right] = \int t^8 \cdot \frac{dt}{-2}$$

$$dx = \frac{dt}{-2}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{aligned} t &= f(x) \\ dt &= f'(x) dx \end{aligned}$$



## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\int (3 - 2x)^8 dx = \left[ \begin{array}{l} 3 - 2x = t / ' \\ -2 dx = dt \end{array} \right] = \int t^8 \cdot \frac{dt}{-2} =$$
$$= -\frac{1}{2} \int t^8 dt$$

$$dx = \frac{dt}{-2}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{aligned} t &= f(x) \\ dt &= f'(x) dx \end{aligned}$$

## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\begin{aligned}\int (3 - 2x)^8 dx &= \left[ \begin{array}{l} 3 - 2x = t \\ -2 dx = dt \end{array} \right] = \int t^8 \cdot \frac{dt}{-2} = \\ &= -\frac{1}{2} \int t^8 dt = -\frac{1}{2} \cdot\end{aligned}$$

$$dx = \frac{dt}{-2}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{aligned}t &= f(x) \\ dt &= f'(x) dx\end{aligned}$$

## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\int (3 - 2x)^8 dx = \left[ \begin{array}{l} 3 - 2x = t \\ -2 dx = dt \end{array} \right] = \int t^8 \cdot \frac{dt}{-2} =$$
$$= -\frac{1}{2} \int t^8 dt = -\frac{1}{2} \cdot \frac{t^9}{9}$$

$$dx = \frac{dt}{-2}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{aligned} t &= f(x) \\ dt &= f'(x) dx \end{aligned}$$

## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$\begin{aligned}\int (3 - 2x)^8 dx &= \left[ \begin{array}{l} 3 - 2x = t \\ -2 dx = dt \end{array} \right] = \int t^8 \cdot \frac{dt}{-2} = \\ &= -\frac{1}{2} \int t^8 dt = -\frac{1}{2} \cdot \frac{t^9}{9} + C\end{aligned}$$

$$dx = \frac{dt}{-2}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{aligned}t &= f(x) \\ dt &= f'(x) dx\end{aligned}$$

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## Rješenje

$$\begin{aligned}\int (3 - 2x)^8 dx &= \left[ \begin{array}{l} 3 - 2x = t \\ -2 dx = dt \end{array} \right] = \int t^8 \cdot \frac{dt}{-2} = \\ &= -\frac{1}{2} \int t^8 dt = -\frac{1}{2} \cdot \frac{t^9}{9} + C = -\frac{1}{18} t^9 + C\end{aligned}$$

$$dx = \frac{dt}{-2}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{aligned}t &= f(x) \\ dt &= f'(x) dx\end{aligned}$$

## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$dx = \frac{dt}{-2}$$

$$\begin{aligned}\int (3 - 2x)^8 dx &= \left[ \begin{array}{l} 3 - 2x = t \\ -2 dx = dt \end{array} \right] = \int t^8 \cdot \frac{dt}{-2} = \\ &= -\frac{1}{2} \int t^8 dt = -\frac{1}{2} \cdot \frac{t^9}{9} + C = -\frac{1}{18} t^9 + C = \\ &= -\frac{1}{18} (3 - 2x)^9 + C\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{aligned}t &= f(x) \\ dt &= f'(x) dx\end{aligned}$$

## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$dx = \frac{dt}{-2}$$

$$\begin{aligned}\int (3 - 2x)^8 dx &= \left[ \begin{array}{l} 3 - 2x = t \\ -2 dx = dt \end{array} \right] = \int t^8 \cdot \frac{dt}{-2} = \\ &= -\frac{1}{2} \int t^8 dt = -\frac{1}{2} \cdot \frac{t^9}{9} + C = -\frac{1}{18} t^9 + C = \\ &= -\frac{1}{18} (3 - 2x)^9\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{aligned}t &= f(x) \\ dt &= f'(x) dx\end{aligned}$$

## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

$$dx = \frac{dt}{-2}$$

$$\begin{aligned}\int (3 - 2x)^8 dx &= \left[ \begin{array}{l} 3 - 2x = t \\ -2 dx = dt \end{array} \right] = \int t^8 \cdot \frac{dt}{-2} = \\ &= -\frac{1}{2} \int t^8 dt = -\frac{1}{2} \cdot \frac{t^9}{9} + C = -\frac{1}{18} t^9 + C = \\ &= -\frac{1}{18} (3 - 2x)^9 + C\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

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## Zadatak 5

Riješite neodređeni integral  $\int (3 - 2x)^8 dx$ .

## Rješenje

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$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\begin{aligned}t &= f(x) \\ dt &= f'(x) dx\end{aligned}$$

## šesti zadatak

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## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\int \sqrt[4]{(x-2)^3} dx =$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\int \sqrt[4]{(x-2)^3} dx = \int (x-2)^{\frac{3}{4}} dx$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\int \sqrt[4]{(x-2)^3} dx = \int (x-2)^{\frac{3}{4}} dx = \left[ \right.$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\int \sqrt[4]{(x-2)^3} dx = \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t \end{array} \right.$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\int \sqrt[4]{(x-2)^3} dx = \int (x-2)^{\frac{3}{4}} dx = \left[ x-2 = t \right]'$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$



## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\int \sqrt[4]{(x-2)^3} dx = \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t \\ dx \end{array} \right]'$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\int \sqrt[4]{(x-2)^3} dx = \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t \text{ / ' } \\ dx = \end{array} \right.$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

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$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

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$$= \int$$

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## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\begin{aligned}\int \sqrt[4]{(x-2)^3} dx &= \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t \\ dx = dt \end{array} \right] = \\ &= \int t^{\frac{3}{4}}\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\begin{aligned}\int \sqrt[4]{(x-2)^3} dx &= \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t / ' \\ dx = dt \end{array} \right] = \\ &= \int t^{\frac{3}{4}} dt\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\begin{aligned}\int \sqrt[4]{(x-2)^3} dx &= \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t / ' \\ dx = dt \end{array} \right] = \\ &= \int t^{\frac{3}{4}} dt = \frac{t^{\frac{7}{4}}}{\frac{7}{4}}\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$



## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\begin{aligned}\int \sqrt[4]{(x-2)^3} dx &= \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t / ' \\ dx = dt \end{array} \right] = \\ &= \int t^{\frac{3}{4}} dt = \frac{t^{\frac{7}{4}}}{\frac{7}{4}} + C\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\begin{aligned}\int \sqrt[4]{(x-2)^3} dx &= \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t /' \\ dx = dt \end{array} \right] = \\ &= \int t^{\frac{3}{4}} dt = \frac{t^{\frac{7}{4}}}{\frac{7}{4}} + C = \frac{4}{7} t^{\frac{7}{4}} + C\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\begin{aligned}\int \sqrt[4]{(x-2)^3} dx &= \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t / ' \\ dx = dt \end{array} \right] = \\ &= \int t^{\frac{3}{4}} dt = \frac{t^{\frac{7}{4}}}{\frac{7}{4}} + C = \frac{4}{7} t^{\frac{7}{4}} + C = \\ &= \frac{4}{7}\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\begin{aligned}\int \sqrt[4]{(x-2)^3} dx &= \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t / ' \\ dx = dt \end{array} \right] = \\ &= \int t^{\frac{3}{4}} dt = \frac{t^{\frac{7}{4}}}{\frac{7}{4}} + C = \frac{4}{7} t^{\frac{7}{4}} + C = \\ &= \frac{4}{7} (x-2)^{\frac{7}{4}}\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\begin{aligned}\int \sqrt[4]{(x-2)^3} dx &= \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t / ' \\ dx = dt \end{array} \right] = \\ &= \int t^{\frac{3}{4}} dt = \frac{t^{\frac{7}{4}}}{\frac{7}{4}} + C = \frac{4}{7} t^{\frac{7}{4}} + C = \\ &= \frac{4}{7} (x-2)^{\frac{7}{4}} + C\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 6

Riješite neodređeni integral  $\int \sqrt[4]{(x-2)^3} dx$ .

## Rješenje

$$\begin{aligned}\int \sqrt[4]{(x-2)^3} dx &= \int (x-2)^{\frac{3}{4}} dx = \left[ \begin{array}{l} x-2 = t /' \\ dx = dt \end{array} \right] = \\ &= \int t^{\frac{3}{4}} dt = \frac{t^{\frac{7}{4}}}{\frac{7}{4}} + C = \frac{4}{7} t^{\frac{7}{4}} + C = \\ &= \frac{4}{7} (x-2)^{\frac{7}{4}} + C, \quad C \in \mathbb{R}\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

**sedmi zadatak**

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## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .



## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

## Rješenje

$$\int x \cdot 7^{x^2} dx =$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t \end{array} \right.$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t \end{array} \right] /'$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t \\ 2x \end{array} \right]'$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t \\ 2x dx \end{array} \right]'$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t \quad /' \\ 2x dx = \end{array} \right.$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t / ' \\ 2x dx = dt \end{array} \right.$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t / ' \\ 2x dx = dt \end{array} \right]$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$



## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t / ' \\ 2x dx = dt \end{array} \right] = \int$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t / ' \\ 2x dx = dt \end{array} \right] = \int 7^t$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t / ' \\ 2x dx = dt \end{array} \right] = \int 7^t \cdot \frac{1}{2} dt = \frac{1}{2} \int 7^t dt = \frac{1}{2} \frac{7^t}{\ln 7} + C = \frac{1}{2} \frac{7^{x^2}}{\ln 7} + C$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

$$x dx = \frac{dt}{2}$$

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t / ' \\ 2x dx = dt \end{array} \right] = \int 7^t \cdot \frac{dt}{2}$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

$$x dx = \frac{dt}{2}$$

## Rješenje

$$\int x \cdot 7^{x^2} dx = \left[ \begin{array}{l} x^2 = t / ' \\ 2x dx = dt \end{array} \right] = \int 7^t \cdot \frac{dt}{2} = \frac{1}{2} \int 7^t dt$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

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Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

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$$\begin{aligned} \int x \cdot 7^{x^2} dx &= \left[ \begin{array}{l} x^2 = t / ' \\ 2x dx = dt \end{array} \right] = \int 7^t \cdot \frac{dt}{2} = \frac{1}{2} \int 7^t dt = \\ &= \frac{1}{2} \cdot \end{aligned}$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

## Zadatak 7

Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

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$$\int a^x dx = \frac{a^x}{\ln a} + C$$

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Riješite neodređeni integral  $\int x \cdot 7^{x^2} dx$ .

$$x dx = \frac{dt}{2}$$

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## Zadatak 7

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$$\int a^x dx = \frac{a^x}{\ln a} + C$$

**osmi zadatak**

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## Zadatak 8

Riješite neodređeni integral  $\int \frac{x \, dx}{\sqrt{1 - x^2}}$ .



## Zadatak 8

Riješite neodređeni integral  $\int \frac{x \, dx}{\sqrt{1-x^2}}$ .

## Rješenje

$$\int \frac{x \, dx}{\sqrt{1-x^2}} =$$

$$\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 8

Riješite neodređeni integral  $\int \frac{x \, dx}{\sqrt{1-x^2}}$ .

## Rješenje

$$\int \frac{x \, dx}{\sqrt{1-x^2}} = \left[ \begin{array}{l} 1 - x^2 = t \end{array} \right.$$

$$\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 8

Riješite neodređeni integral  $\int \frac{x \, dx}{\sqrt{1-x^2}}$ .

## Rješenje

$$\int \frac{x \, dx}{\sqrt{1-x^2}} = \left[ \begin{array}{l} 1-x^2 = t \end{array} \right]'$$

$$\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 8

Riješite neodređeni integral  $\int \frac{x \, dx}{\sqrt{1-x^2}}$ .

## Rješenje

$$\int \frac{x \, dx}{\sqrt{1-x^2}} = \left[ \begin{array}{l} 1-x^2 = t \\ -2x \end{array} \right]$$

$$\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 8

Riješite neodređeni integral  $\int \frac{x \, dx}{\sqrt{1-x^2}}$ .

## Rješenje

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## Zadatak 8

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$$\int \frac{x \, dx}{\sqrt{1-x^2}} = \left[ \begin{array}{l} 1-x^2 = t / ' \\ -2x \, dx = dt \end{array} \right] = \int$$

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Riješite neodređeni integral  $\int \frac{x \, dx}{\sqrt{1-x^2}}$ .

## Rješenje

$$\int \frac{x \, dx}{\sqrt{1-x^2}} = \left[ \begin{array}{l} 1-x^2 = t / ' \\ -2x \, dx = dt \end{array} \right] = \int \frac{1}{\sqrt{t}}$$

$$\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 8

Riješite neodređeni integral  $\int \frac{x \, dx}{\sqrt{1-x^2}}$ .

$$x \, dx = -\frac{dt}{2}$$

## Rješenje

$$\int \frac{x \, dx}{\sqrt{1-x^2}} = \left[ \begin{array}{l} 1-x^2 = t \\ -2x \, dx = dt \end{array} \right] = \int \frac{-\frac{dt}{2}}{\sqrt{t}}$$

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## Zadatak 8

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$$\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$$

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$$\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$$

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$$\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 8

Riješite neodređeni integral  $\int \frac{x \, dx}{\sqrt{1-x^2}}$ .

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$$\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$$

**deveti zadatak**

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## Zadatak 9

Riješite neodređeni integral  $\int \frac{\sqrt[3]{1 + \ln x}}{x} dx$ .

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## Rješenje

$$\int \frac{\sqrt[3]{1 + \ln x}}{x} dx =$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 9

Riješite neodređeni integral  $\int \frac{\sqrt[3]{1 + \ln x}}{x} dx$ .

## Rješenje

$$\int \frac{\sqrt[3]{1 + \ln x}}{x} dx = \left[ \begin{array}{l} 1 + \ln x = t \end{array} \right.$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$



## Zadatak 9

Riješite neodređeni integral  $\int \frac{\sqrt[3]{1 + \ln x}}{x} dx$ .

## Rješenje

$$\int \frac{\sqrt[3]{1 + \ln x}}{x} dx = \left[ 1 + \ln x = t \right]'$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 9

Riješite neodređeni integral  $\int \frac{\sqrt[3]{1 + \ln x}}{x} dx$ .

## Rješenje

$$\int \frac{\sqrt[3]{1 + \ln x}}{x} dx = \left[ \begin{array}{l} 1 + \ln x = t \\ \frac{1}{x} \end{array} \right]'$$

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$$\int \frac{\sqrt[3]{1 + \ln x}}{x} dx = \left[ \begin{array}{l} 1 + \ln x = t /' \\ \frac{1}{x} dx = \end{array} \right.$$

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$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 9

Riješite neodređeni integral  $\int \frac{\sqrt[3]{1 + \ln x}}{x} dx$ .

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$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 9

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## Rješenje

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$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 9

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## Rješenje

$$\begin{aligned}\int \frac{\sqrt[3]{1 + \ln x}}{x} dx &= \left[ \begin{array}{l} 1 + \ln x = t / ' \\ \frac{1}{x} dx = dt \end{array} \right] = \int \sqrt[3]{t} dt = \int t^{\frac{1}{3}} dt = \\ &= \frac{t^{\frac{4}{3}}}{\frac{4}{3}} + C = \frac{3}{4} t^{\frac{4}{3}} + C\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 9

Riješite neodređeni integral  $\int \frac{\sqrt[3]{1 + \ln x}}{x} dx$ .

## Rješenje

$$\begin{aligned}\int \frac{\sqrt[3]{1 + \ln x}}{x} dx &= \left[ \begin{array}{l} 1 + \ln x = t / ' \\ \frac{1}{x} dx = dt \end{array} \right] = \int \sqrt[3]{t} dt = \int t^{\frac{1}{3}} dt = \\ &= \frac{t^{\frac{4}{3}}}{\frac{4}{3}} + C = \frac{3}{4} t^{\frac{4}{3}} + C = \frac{3}{4}\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 9

Riješite neodređeni integral  $\int \frac{\sqrt[3]{1 + \ln x}}{x} dx$ .

## Rješenje

$$\begin{aligned}\int \frac{\sqrt[3]{1 + \ln x}}{x} dx &= \left[ \begin{array}{l} 1 + \ln x = t / ' \\ \frac{1}{x} dx = dt \end{array} \right] = \int \sqrt[3]{t} dt = \int t^{\frac{1}{3}} dt = \\ &= \frac{t^{\frac{4}{3}}}{\frac{4}{3}} + C = \frac{3}{4} t^{\frac{4}{3}} + C = \frac{3}{4} (1 + \ln x)^{\frac{4}{3}}\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

## Zadatak 9

Riješite neodređeni integral  $\int \frac{\sqrt[3]{1 + \ln x}}{x} dx$ .

## Rješenje

$$\begin{aligned}\int \frac{\sqrt[3]{1 + \ln x}}{x} dx &= \left[ \begin{array}{l} 1 + \ln x = t / ' \\ \frac{1}{x} dx = dt \end{array} \right] = \int \sqrt[3]{t} dt = \int t^{\frac{1}{3}} dt = \\ &= \frac{t^{\frac{4}{3}}}{\frac{4}{3}} + C = \frac{3}{4} t^{\frac{4}{3}} + C = \frac{3}{4} (1 + \ln x)^{\frac{4}{3}} + C\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$



## Zadatak 9

Riješite neodređeni integral  $\int \frac{\sqrt[3]{1 + \ln x}}{x} dx$ .

## Rješenje

$$\begin{aligned}\int \frac{\sqrt[3]{1 + \ln x}}{x} dx &= \left[ \begin{array}{l} 1 + \ln x = t / ' \\ \frac{1}{x} dx = dt \end{array} \right] = \int \sqrt[3]{t} dt = \int t^{\frac{1}{3}} dt = \\ &= \frac{t^{\frac{4}{3}}}{\frac{4}{3}} + C = \frac{3}{4} t^{\frac{4}{3}} + C = \frac{3}{4} (1 + \ln x)^{\frac{4}{3}} + C, \quad C \in \mathbb{R}\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

# **Napomena za logaritamsku funkciju**

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# Napomena

$$(\ln |x|)' = \frac{1}{x}, \quad x \neq 0$$

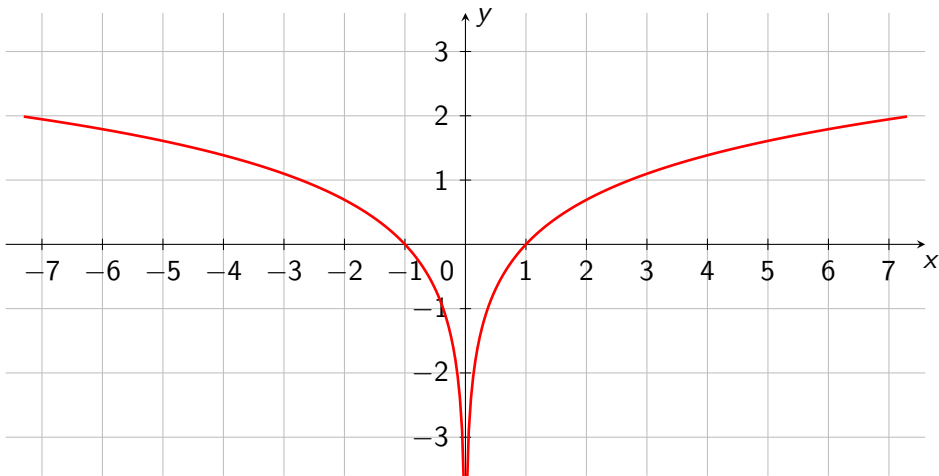
- Ako je  $x > 0$ , tada je  $|x| = x$  pa znamo da vrijedi

$$(\ln x)' = \frac{1}{x}$$

- Ako je  $x < 0$ , tada je  $|x| = -x$  pa korištenjem pravila za derivaciju složene funkcije ponovo dobivamo

$$(\ln(-x))' = \frac{1}{-x} \cdot (-x)' = \frac{1}{-x} \cdot (-1) = \frac{1}{x}$$

## Graf funkcije $f(x) = \ln |x|$



**deseti zadatak**

---

## Zadatak 10

*Riješite neodređeni integral  $\int \frac{dx}{3 - 2x}$ .*

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

## Rješenje

$$\int \frac{dx}{3-2x} =$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

## Rješenje

$$\int \frac{dx}{3-2x} = \left[ \begin{array}{l} 3-2x = t \end{array} \right.$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$



## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

## Rješenje

$$\int \frac{dx}{3-2x} = \left[ 3-2x = t \right]'$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

## Rješenje

$$\int \frac{dx}{3-2x} = \left[ \begin{array}{l} 3-2x = t \\ -2 \end{array} \right]'$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

## Rješenje

$$\int \frac{dx}{3-2x} = \left[ \begin{array}{l} 3-2x = t \\ -2 dx \end{array} \right]$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

## Rješenje

$$\int \frac{dx}{3-2x} = \left[ \begin{array}{l} 3-2x = t /' \\ -2 dx = \end{array} \right.$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

## Rješenje

$$\int \frac{dx}{3-2x} = \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right.$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

## Rješenje

$$\int \frac{dx}{3-2x} = \left[ \begin{array}{l} 3-2x = t / ' \\ -2 dx = dt \end{array} \right]$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

## Rješenje

$$\int \frac{dx}{3-2x} = \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{dt}{t}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

## Rješenje

$$\int \frac{dx}{3-2x} = \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{1}{t}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$



## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

### Rješenje

$$dx = \frac{dt}{-2}$$

$$\int \frac{dx}{3-2x} = \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{\frac{dt}{-2}}{t}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

### Rješenje

$$dx = \frac{dt}{-2}$$

$$\int \frac{dx}{3-2x} = \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{\frac{dt}{-2}}{t} = -\frac{1}{2} \int \frac{dt}{t}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

### Rješenje

$$dx = \frac{dt}{-2}$$

$$\begin{aligned} \int \frac{dx}{3-2x} &= \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{\frac{dt}{-2}}{t} = -\frac{1}{2} \int \frac{dt}{t} = \\ &= -\frac{1}{2} \end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

### Rješenje

$$dx = \frac{dt}{-2}$$

$$\begin{aligned}\int \frac{dx}{3-2x} &= \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{\frac{dt}{-2}}{t} = -\frac{1}{2} \int \frac{dt}{t} = \\ &= -\frac{1}{2} \ln |t|\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

### Rješenje

$$dx = \frac{dt}{-2}$$

$$\begin{aligned}\int \frac{dx}{3-2x} &= \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{\frac{dt}{-2}}{t} = -\frac{1}{2} \int \frac{dt}{t} = \\ &= -\frac{1}{2} \ln |t| + C\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

### Rješenje

$$dx = \frac{dt}{-2}$$

$$\begin{aligned}\int \frac{dx}{3-2x} &= \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{\frac{dt}{-2}}{t} = -\frac{1}{2} \int \frac{dt}{t} = \\ &= -\frac{1}{2} \ln |t| + C = -\frac{1}{2}\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

### Rješenje

$$dx = \frac{dt}{-2}$$

$$\begin{aligned}\int \frac{dx}{3-2x} &= \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{\frac{dt}{-2}}{t} = -\frac{1}{2} \int \frac{dt}{t} = \\ &= -\frac{1}{2} \ln |t| + C = -\frac{1}{2} \ln |3-2x| \end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

### Rješenje

$$dx = \frac{dt}{-2}$$

$$\begin{aligned}\int \frac{dx}{3-2x} &= \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{\frac{dt}{-2}}{t} = -\frac{1}{2} \int \frac{dt}{t} = \\ &= -\frac{1}{2} \ln |t| + C = -\frac{1}{2} \ln |3-2x| + C\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$



## Zadatak 10

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

### Rješenje

$$dx = \frac{dt}{-2}$$

$$\begin{aligned}\int \frac{dx}{3-2x} &= \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{\frac{dt}{-2}}{t} = -\frac{1}{2} \int \frac{dt}{t} = \\ &= -\frac{1}{2} \ln |t| + C = -\frac{1}{2} \ln |3-2x| + C, \quad C \in \mathbb{R}\end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

## Zadatak 10

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

Riješite neodređeni integral  $\int \frac{dx}{3-2x}$ .

## Rješenje

$$dx = \frac{dt}{-2}$$

$$\begin{aligned} \int \frac{dx}{3-2x} &= \left[ \begin{array}{l} 3-2x = t \\ -2 dx = dt \end{array} \right] = \int \frac{\frac{dt}{-2}}{t} = -\frac{1}{2} \int \frac{dt}{t} = \\ &= -\frac{1}{2} \ln |t| + C = -\frac{1}{2} \ln |3-2x| + C, \quad C \in \mathbb{R} \end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$$

$$\int \frac{dx}{x} = \ln |x| + C$$

# **jedanaesti zadatak**

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## Zadatak 11

Riješite neodređeni integral  $\int \frac{1 - 3x}{3 + 2x} dx$ .

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1 - 3x}{3 + 2x} dx$ .

## Rješenje

$$\int \frac{1 - 3x}{3 + 2x} dx =$$

$$\int \frac{dx}{ax + b} = \frac{1}{a} \ln |ax + b| + C$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

## Rješenje

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx =$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

## Rješenje

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx =$$

$$(-3x+1) : (2x+3) =$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

## Rješenje

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx =$$

$$(-3x+1) : (2x+3) = -\frac{3}{2}$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$



## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

## Rješenje

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx =$$

$$\begin{aligned} (-3x+1) : (2x+3) &= -\frac{3}{2} \\ &+ \frac{9}{2} \end{aligned}$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

## Rješenje

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx =$$

$$(-3x+1) : (2x+3) = -\frac{3}{2} \\ 3x + \frac{9}{2}$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

## Rješenje

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx =$$

$$\begin{array}{r} (-3x+1) : (2x+3) = -\frac{3}{2} \\ \underline{3x + \frac{9}{2}} \end{array}$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

## Rješenje

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx =$$

$$\begin{array}{r} (-3x + 1) : (2x + 3) = -\frac{3}{2} \\ 3x + \frac{9}{2} \\ \hline \frac{11}{2} \end{array}$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

Rješenje

$$P_1(x) = P_2(x)Q(x) + R(x)$$

$$\begin{array}{r} (-3x + 1) : (2x + 3) = -\frac{3}{2} \\ 3x + \frac{9}{2} \\ \hline \frac{11}{2} \end{array}$$

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx =$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

Rješenje

$$P_1(x) = P_2(x)Q(x) + R(x)$$

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx =$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

$$\begin{array}{r} (-3x+1) : (2x+3) = -\frac{3}{2} \\ 3x + \frac{9}{2} \\ \hline \frac{11}{2} \end{array}$$

$Q(x)$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

Rješenje

$$P_1(x) = P_2(x)Q(x) + R(x)$$

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx =$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

$$\begin{array}{r} (-3x+1) : (2x+3) = -\frac{3}{2} \\ 3x + \frac{9}{2} \\ \hline \frac{11}{2} \end{array}$$

$Q(x)$

$R(x)$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

Rješenje

$$P_1(x) = P_2(x)Q(x) + R(x)$$

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx =$$

$$\begin{array}{r} (-3x+1) : (2x+3) = -\frac{3}{2} \\ 3x + \frac{9}{2} \\ \hline \frac{11}{2} \end{array}$$

$Q(x)$

$R(x)$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

$$\frac{P_1(x)}{P_2(x)} = Q(x) + \frac{R(x)}{P_2(x)}$$



## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

Rješenje

$$P_1(x) = P_2(x)Q(x) + R(x)$$

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx = \int \left($$

$$\begin{array}{r} (-3x+1) : (2x+3) = -\frac{3}{2} \\ 3x + \frac{9}{2} \\ \hline \frac{11}{2} \end{array}$$

$Q(x)$

$R(x)$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

$$\frac{P_1(x)}{P_2(x)} = Q(x) + \frac{R(x)}{P_2(x)}$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

Rješenje

$$P_1(x) = P_2(x)Q(x) + R(x)$$

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx = \int \left( -\frac{3}{2} \right.$$

$$\begin{array}{r} (-3x+1) : (2x+3) = -\frac{3}{2} \\ \underline{3x + \frac{9}{2}} \\ \frac{11}{2} \end{array}$$

$Q(x)$

$R(x)$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

$$\frac{P_1(x)}{P_2(x)} = Q(x) + \frac{R(x)}{P_2(x)}$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

Rješenje

$$P_1(x) = P_2(x)Q(x) + R(x)$$

$$\begin{array}{r} (-3x + 1) : (2x + 3) = -\frac{3}{2} \\ \underline{3x + \frac{9}{2}} \\ \frac{11}{2} \end{array}$$

$Q(x)$  (indicated by a blue arrow from the quotient  $-\frac{3}{2}$ )

$R(x)$  (indicated by a blue arrow from the remainder  $\frac{11}{2}$ )

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx = \int \left( -\frac{3}{2} + \right.$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

$$\frac{P_1(x)}{P_2(x)} = Q(x) + \frac{R(x)}{P_2(x)}$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

Rješenje

$$P_1(x) = P_2(x)Q(x) + R(x)$$

$$\begin{array}{r} (-3x + 1) : (2x + 3) = -\frac{3}{2} \\ \underline{3x + \frac{9}{2}} \\ \frac{11}{2} \end{array}$$

$Q(x)$  (indicated by a blue arrow from the quotient  $-\frac{3}{2}$ )

$R(x)$  (indicated by a blue arrow from the remainder  $\frac{11}{2}$ )

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx = \int \left( -\frac{3}{2} + \frac{\frac{11}{2}}{2x+3} \right) dx$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

$$\frac{P_1(x)}{P_2(x)} = Q(x) + \frac{R(x)}{P_2(x)}$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

Rješenje

$$P_1(x) = P_2(x)Q(x) + R(x)$$

$$\int \frac{1-3x}{3+2x} dx = \int \frac{-3x+1}{2x+3} dx = \int \left( -\frac{3}{2} + \frac{\frac{11}{2}}{2x+3} \right) dx$$

$$\begin{array}{r} (-3x+1) : (2x+3) = -\frac{3}{2} \\ \underline{3x + \frac{9}{2}} \\ \frac{11}{2} \end{array}$$

$Q(x)$  (indicated by a blue arrow from the quotient  $-\frac{3}{2}$ )

$R(x)$  (indicated by a blue arrow from the remainder  $\frac{11}{2}$ )

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln |ax+b| + C$$

$$\frac{P_1(x)}{P_2(x)} = Q(x) + \frac{R(x)}{P_2(x)}$$

## Zadatak 11

Riješite neodređeni integral  $\int \frac{1-3x}{3+2x} dx$ .

Rješenje

$$P_1(x) = P_2(x)Q(x) + R(x)$$

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Rješenje

$$P_1(x) = P_2(x)Q(x) + R(x)$$

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$Q(x)$  (indicated by a blue arrow from the quotient  $-\frac{3}{2}$ )  
 $R(x)$  (indicated by a blue arrow from the remainder  $\frac{11}{2}$ )

$$\begin{aligned} \int \frac{1-3x}{3+2x} dx &= \int \frac{-3x+1}{2x+3} dx = \int \left( -\frac{3}{2} + \frac{\frac{11}{2}}{2x+3} \right) dx = \\ &= -\frac{3}{2} \int dx + \frac{11}{2} \int \frac{dx}{2x+3} = -\frac{3}{2}x + \frac{11}{2} \cdot \frac{1}{2} \ln |2x+3| + C = \\ &= -\frac{3}{2}x + \frac{11}{4} \ln |2x+3| + C \end{aligned}$$

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$$= -\frac{3}{2}x + \frac{11}{4} \ln|2x+3| + C, \quad C \in \mathbb{R}$$

$$\int \frac{dx}{ax+b} = \frac{1}{a} \ln|ax+b| + C$$

$$\frac{P_1(x)}{P_2(x)} = Q(x) + \frac{R(x)}{P_2(x)}$$

# **dvanaesti zadatak**

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## Zadatak 12

Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

## Zadatak 12

Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

## Rješenje

$$(x^2 + 5x - 4) : (5x + 3) =$$

## Zadatak 12

Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

## Rješenje

$$(x^2 + 5x - 4) : (5x + 3) = \frac{1}{5}x$$

## Zadatak 12

Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

## Rješenje

$$(x^2 + 5x - 4) : (5x + 3) = \frac{1}{5}x$$

$$-x^2$$

## Zadatak 12

Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

## Rješenje

$$(x^2 + 5x - 4) : (5x + 3) = \frac{1}{5}x - x^2 - \frac{3}{5}x$$

## Zadatak 12

Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

### Rješenje

$$(x^2 + 5x - 4) : (5x + 3) = \frac{1}{5}x$$

$$-x^2 - \frac{3}{5}x$$

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## Zadatak 12

Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

### Rješenje

$$(x^2 + 5x - 4) : (5x + 3) = \frac{1}{5}x$$

$$\begin{array}{r} -x^2 - \frac{3}{5}x \\ \hline \frac{22}{5}x \end{array}$$

## Zadatak 12

Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

### Rješenje

$$(x^2 + 5x - 4) : (5x + 3) = \frac{1}{5}x$$

$$\begin{array}{r} -x^2 - \frac{3}{5}x \\ \hline \frac{22}{5}x - 4 \end{array}$$

## Zadatak 12

Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

### Rješenje

$$\begin{array}{r} (x^2 + 5x - 4) : (5x + 3) = \frac{1}{5}x + \frac{22}{25} \\ -x^2 - \frac{3}{5}x \\ \hline \frac{22}{5}x - 4 \end{array}$$

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$$(x^2 + 5x - 4) : (5x + 3) = \frac{1}{5}x + \frac{22}{25}$$

$$\begin{array}{r} -x^2 - \frac{3}{5}x \\ \hline \frac{22}{5}x - 4 \\ - \frac{22}{5}x - \frac{66}{25} \\ \hline \frac{166}{25} \end{array}$$

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Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

### Rješenje

$$(x^2 + 5x - 4) : (5x + 3) = \boxed{\frac{1}{5}x + \frac{22}{25}} \leftarrow \boxed{Q(x)}$$

$$\begin{array}{r} -x^2 - \frac{3}{5}x \\ \hline \frac{22}{5}x - 4 \\ - \frac{22}{5}x - \frac{66}{25} \\ \hline \frac{166}{25} \end{array}$$



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$$\boxed{R(x)} \rightarrow \boxed{-\frac{166}{25}}$$

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$$P_1(x) = P_2(x)Q(x) + R(x)$$

$$\frac{P_1(x)}{P_2(x)} = Q(x) + \frac{R(x)}{P_2(x)}$$

$$\frac{x^2 + 5x - 4}{5x + 3} =$$

## Zadatak 12

Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

### Rješenje

$$(x^2 + 5x - 4) : (5x + 3) = \boxed{\frac{1}{5}x + \frac{22}{25}} \leftarrow Q(x)$$

$$\begin{array}{r} -x^2 - \frac{3}{5}x \\ \hline \frac{22}{5}x - 4 \\ -\frac{22}{5}x - \frac{66}{25} \\ \hline \end{array}$$

$$P_1(x) = P_2(x)Q(x) + R(x)$$

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$$\frac{x^2 + 5x - 4}{5x + 3} = \frac{1}{5}x + \frac{22}{25}$$

## Zadatak 12

Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

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$$(x^2 + 5x - 4) : (5x + 3) = \boxed{\frac{1}{5}x + \frac{22}{25}} \leftarrow Q(x)$$

$$\begin{array}{r} -x^2 - \frac{3}{5}x \\ \hline \end{array}$$

$$\frac{22}{5}x - 4$$

$$\begin{array}{r} -\frac{22}{5}x - \frac{66}{25} \\ \hline \end{array}$$

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$$P_1(x) = P_2(x)Q(x) + R(x)$$

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Riješite neodređeni integral  $\int \frac{x^2 + 5x - 4}{5x + 3} dx$ .

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$$P_1(x) = P_2(x)Q(x) + R(x)$$

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$$R(x) \rightarrow \boxed{-\frac{166}{25}}$$

$$\frac{x^2 + 5x - 4}{5x + 3} = \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3}$$

## Zadatak 12

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$$\frac{22}{5}x - 4$$

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$$P_1(x) = P_2(x)Q(x) + R(x)$$

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$$\frac{x^2 + 5x - 4}{5x + 3} = \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3}$$

$$\int \frac{x^2 + 5x - 4}{5x + 3} dx =$$



$$\int \frac{x^2 + 5x - 4}{5x + 3} dx = \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx$$

$$\int \frac{x^2 + 5x - 4}{5x + 3} dx = \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx =$$

$$= \frac{1}{5} \int x dx$$

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$$= \frac{1}{5} \int x dx +$$

$$\begin{aligned}\int \frac{x^2 + 5x - 4}{5x + 3} dx &= \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx = \\ &= \frac{1}{5} \int x dx + \frac{22}{25} \int dx\end{aligned}$$

$$\int \frac{x^2 + 5x - 4}{5x + 3} dx = \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx =$$
$$= \frac{1}{5} \int x dx + \frac{22}{25} \int dx -$$

$$\begin{aligned}\int \frac{x^2 + 5x - 4}{5x + 3} dx &= \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx = \\ &= \frac{1}{5} \int x dx + \frac{22}{25} \int dx - \frac{166}{25} \int \frac{dx}{5x + 3}\end{aligned}$$

$$\begin{aligned}
 \int \frac{x^2 + 5x - 4}{5x + 3} dx &= \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx = \\
 &= \frac{1}{5} \int x dx + \frac{22}{25} \int dx - \frac{166}{25} \int \frac{dx}{5x + 3} = \\
 &= \frac{1}{5} \cdot
 \end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\int \frac{x^2 + 5x - 4}{5x + 3} dx = \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx =$$

$$= \frac{1}{5} \int x dx + \frac{22}{25} \int dx - \frac{166}{25} \int \frac{dx}{5x + 3} =$$

$$= \frac{1}{5} \cdot \frac{x^2}{2}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$



$$\int \frac{x^2 + 5x - 4}{5x + 3} dx = \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx =$$

$$= \frac{1}{5} \int x dx + \frac{22}{25} \int dx - \frac{166}{25} \int \frac{dx}{5x + 3} =$$

$$= \frac{1}{5} \cdot \frac{x^2}{2} +$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\int \frac{x^2 + 5x - 4}{5x + 3} dx = \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx =$$

$$= \frac{1}{5} \int x dx + \frac{22}{25} \int dx - \frac{166}{25} \int \frac{dx}{5x + 3} =$$

$$= \frac{1}{5} \cdot \frac{x^2}{2} + \frac{22}{25}x$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\int \frac{x^2 + 5x - 4}{5x + 3} dx = \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx =$$

$$= \frac{1}{5} \int x dx + \frac{22}{25} \int dx - \frac{166}{25} \int \frac{dx}{5x + 3} =$$

$$= \frac{1}{5} \cdot \frac{x^2}{2} + \frac{22}{25}x - \frac{166}{25} \cdot$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\int \frac{dx}{ax + b} = \frac{1}{a} \ln |ax + b| + C$$

$$\int \frac{x^2 + 5x - 4}{5x + 3} dx = \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx =$$

$$= \frac{1}{5} \int x dx + \frac{22}{25} \int dx - \frac{166}{25} \int \frac{dx}{5x + 3} =$$

$$= \frac{1}{5} \cdot \frac{x^2}{2} + \frac{22}{25}x - \frac{166}{25} \cdot \frac{1}{5} \ln |5x + 3|$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\int \frac{dx}{ax + b} = \frac{1}{a} \ln |ax + b| + C$$

$$\int \frac{x^2 + 5x - 4}{5x + 3} dx = \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx =$$

$$= \frac{1}{5} \int x dx + \frac{22}{25} \int dx - \frac{166}{25} \int \frac{dx}{5x + 3} =$$

$$= \frac{1}{5} \cdot \frac{x^2}{2} + \frac{22}{25}x - \frac{166}{25} \cdot \frac{1}{5} \ln |5x + 3| + C$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\int \frac{dx}{ax + b} = \frac{1}{a} \ln |ax + b| + C$$

$$\begin{aligned}
 \int \frac{x^2 + 5x - 4}{5x + 3} dx &= \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx = \\
 &= \frac{1}{5} \int x dx + \frac{22}{25} \int dx - \frac{166}{25} \int \frac{dx}{5x + 3} = \\
 &= \frac{1}{5} \cdot \frac{x^2}{2} + \frac{22}{25}x - \frac{166}{25} \cdot \frac{1}{5} \ln |5x + 3| + C = \\
 &= \frac{1}{10}x^2 + \frac{22}{25}x - \frac{166}{125} \ln |5x + 3| + C
 \end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\int \frac{dx}{ax + b} = \frac{1}{a} \ln |ax + b| + C$$

$$\begin{aligned}
 \int \frac{x^2 + 5x - 4}{5x + 3} dx &= \int \left( \frac{1}{5}x + \frac{22}{25} + \frac{-\frac{166}{25}}{5x + 3} \right) dx = \\
 &= \frac{1}{5} \int x dx + \frac{22}{25} \int dx - \frac{166}{25} \int \frac{dx}{5x + 3} = \\
 &= \frac{1}{5} \cdot \frac{x^2}{2} + \frac{22}{25}x - \frac{166}{25} \cdot \frac{1}{5} \ln |5x + 3| + C = \\
 &= \frac{1}{10}x^2 + \frac{22}{25}x - \frac{166}{125} \ln |5x + 3| + C, \quad C \in \mathbb{R}
 \end{aligned}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\int \frac{dx}{ax + b} = \frac{1}{a} \ln |ax + b| + C$$

**trinaesti zadatak**

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### Zadatak 13

Riješite neodređeni integral  $\int \frac{1 - \sin x}{x + \cos x} dx$ .

## Zadatak 13

Riješite neodređeni integral  $\int \frac{1 - \sin x}{x + \cos x} dx$ .

## Rješenje

$$\int \frac{1 - \sin x}{x + \cos x} dx =$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 13

Riješite neodređeni integral  $\int \frac{1 - \sin x}{x + \cos x} dx$ .

## Rješenje

$$\int \frac{1 - \sin x}{x + \cos x} dx = \int \text{—————}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 13

Riješite neodređeni integral  $\int \frac{1 - \sin x}{x + \cos x} dx$ .

## Rješenje

$$\int \frac{1 - \sin x}{x + \cos x} dx = \int \frac{1 - \sin x}{x + \cos x}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 13

Riješite neodređeni integral  $\int \frac{1 - \sin x}{x + \cos x} dx$ .

## Rješenje

$$\int \frac{1 - \sin x}{x + \cos x} dx = \int \frac{(x + \cos x)'}{x + \cos x}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 13

Riješite neodređeni integral  $\int \frac{1 - \sin x}{x + \cos x} dx$ .

## Rješenje

$$\int \frac{1 - \sin x}{x + \cos x} dx = \int \frac{(x + \cos x)'}{x + \cos x} dx$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 13

Riješite neodređeni integral  $\int \frac{1 - \sin x}{x + \cos x} dx$ .

## Rješenje

$$\int \frac{1 - \sin x}{x + \cos x} dx = \int \frac{(x + \cos x)'}{x + \cos x} dx = \ln |x + \cos x|$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 13

Riješite neodređeni integral  $\int \frac{1 - \sin x}{x + \cos x} dx$ .

## Rješenje

$$\int \frac{1 - \sin x}{x + \cos x} dx = \int \frac{(x + \cos x)'}{x + \cos x} dx = \ln |x + \cos x| + C$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$



## Zadatak 13

Riješite neodređeni integral  $\int \frac{1 - \sin x}{x + \cos x} dx$ .

## Rješenje

$$\int \frac{1 - \sin x}{x + \cos x} dx = \int \frac{(x + \cos x)'}{x + \cos x} dx = \ln |x + \cos x| + C, \quad C \in \mathbb{R}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## četrnaesti zadatak

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## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Rješenje

$$\int \frac{dx}{e^x + 2} =$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Rješenje

$$\int \frac{dx}{e^x + 2} = \int \text{—————}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Rješenje

$$\int \frac{dx}{e^x + 2} = \int \frac{1}{e^x + 2}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Rješenje

$$\int \frac{dx}{e^x + 2} = \int \frac{(e^x + 2) - e^x}{e^x + 2}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Rješenje

$$\int \frac{dx}{e^x + 2} = \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$



## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Rješenje

$$\int \frac{dx}{e^x + 2} = \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Rješenje

$$\int \frac{dx}{e^x + 2} = \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Rješenje

$$\int \frac{dx}{e^x + 2} = \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left( 1 - \frac{e^x}{e^x + 2} \right) dx$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Rješenje

$$\int \frac{dx}{e^x + 2} = \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left( 1 - \right.$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Rješenje

$$\int \frac{dx}{e^x + 2} = \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left( 1 - \frac{e^x}{e^x + 2} \right)$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

## Rješenje

$$\int \frac{dx}{e^x + 2} = \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left( 1 - \frac{e^x}{e^x + 2} \right) dx$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\ &= \frac{1}{2} \cdot \left( \right)\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\ &= \frac{1}{2} \cdot \left( \int dx \right)\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$



## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\ &= \frac{1}{2} \cdot \left( \int dx - \right)\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\ &= \frac{1}{2} \cdot \left( \int dx - \int \frac{e^x}{e^x + 2} dx \right)\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\ &= \frac{1}{2} \cdot \left( \int dx - \int \frac{e^x}{e^x + 2} dx \right) = \frac{1}{2} x\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\ &= \frac{1}{2} \cdot \left( \int dx - \int \frac{e^x}{e^x + 2} dx \right) = \frac{1}{2}x -\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\ &= \frac{1}{2} \cdot \left( \int dx - \int \frac{e^x}{e^x + 2} dx \right) = \frac{1}{2}x - \frac{1}{2} \int \text{—————}\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\ &= \frac{1}{2} \cdot \left( \int dx - \int \frac{e^x}{e^x + 2} dx \right) = \frac{1}{2}x - \frac{1}{2} \int \frac{1}{1 + e^{-x}} dx\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\ &= \frac{1}{2} \cdot \left( \int dx - \int \frac{e^x}{e^x + 2} dx \right) = \frac{1}{2}x - \frac{1}{2} \int \frac{(e^x + 2)'}{e^x + 2}\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\ &= \frac{1}{2} \cdot \left( \int dx - \int \frac{e^x}{e^x + 2} dx \right) = \frac{1}{2}x - \frac{1}{2} \int \frac{(e^x + 2)'}{e^x + 2} dx\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$



## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\&= \frac{1}{2} \cdot \left(\int dx - \int \frac{e^x}{e^x + 2} dx\right) = \frac{1}{2}x - \frac{1}{2} \int \frac{(e^x + 2)'}{e^x + 2} dx = \\&= \frac{1}{2}x\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\&= \frac{1}{2} \cdot \left( \int dx - \int \frac{e^x}{e^x + 2} dx \right) = \frac{1}{2}x - \frac{1}{2} \int \frac{(e^x + 2)'}{e^x + 2} dx = \\&= \frac{1}{2}x -\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\&= \frac{1}{2} \cdot \left( \int dx - \int \frac{e^x}{e^x + 2} dx \right) = \frac{1}{2}x - \frac{1}{2} \int \frac{(e^x + 2)'}{e^x + 2} dx = \\&= \frac{1}{2}x - \frac{1}{2}\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

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$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\&= \frac{1}{2} \cdot \left( \int dx - \int \frac{e^x}{e^x + 2} dx \right) = \frac{1}{2}x - \frac{1}{2} \int \frac{(e^x + 2)'}{e^x + 2} dx = \\&= \frac{1}{2}x - \frac{1}{2} \ln(e^x + 2) + C\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$

## Zadatak 14

Riješite neodređeni integral  $\int \frac{dx}{e^x + 2}$ .

### Rješenje

$$\begin{aligned}\int \frac{dx}{e^x + 2} &= \frac{1}{2} \int \frac{(e^x + 2) - e^x}{e^x + 2} dx = \frac{1}{2} \int \left(1 - \frac{e^x}{e^x + 2}\right) dx = \\&= \frac{1}{2} \cdot \left( \int dx - \int \frac{e^x}{e^x + 2} dx \right) = \frac{1}{2}x - \frac{1}{2} \int \frac{(e^x + 2)'}{e^x + 2} dx = \\&= \frac{1}{2}x - \frac{1}{2} \ln(e^x + 2) + C, \quad C \in \mathbb{R}\end{aligned}$$

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C$$