

Pripremna nastava matematike 2024

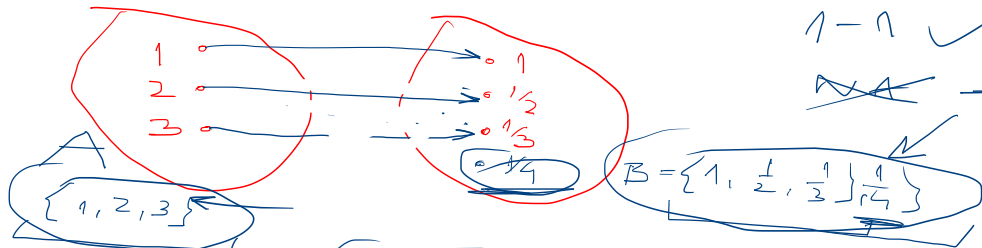
Drugi deo - Zoran Ovcin

MP, MM, ME

Funkcije

$$f: A \rightarrow B$$

Skicirati funkciju $f = \{(1,1), (2, \frac{1}{2}), (3, \frac{1}{3})\}$, odrediti domen A i kodomen B funkcije f .



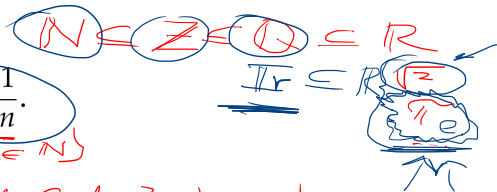
Napisati formulu za funkciju f .

$$f(x) = \frac{1}{x}$$

Nizovi $f: \mathbb{N} \rightarrow \mathbb{R}$

Skicirati funkciju $f: \mathbb{N} \rightarrow \mathbb{R}$ datu formulom $f(n) = \frac{1}{n}$.

$\langle 1, 2, 3, 4, \dots \rangle$

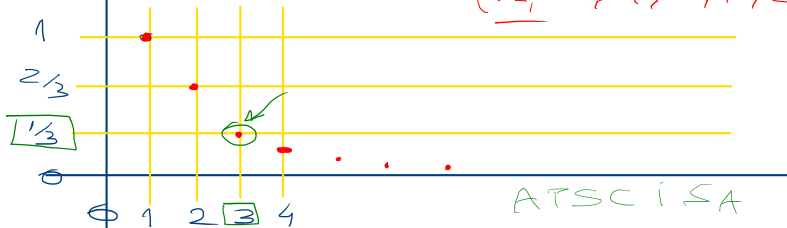


$f(n) = \frac{1}{n}$

$\mathbb{Q} = \left\{ \frac{m}{n} \mid m \in \mathbb{Z}, n \in \mathbb{N} \right\}$

$\langle \dots, -2, -1, 0, 1, 2, 3, \dots \rangle$

ORDINATA



Skicirati u koordinatnom sistemu ordinatni skup tačaka funkcije f .

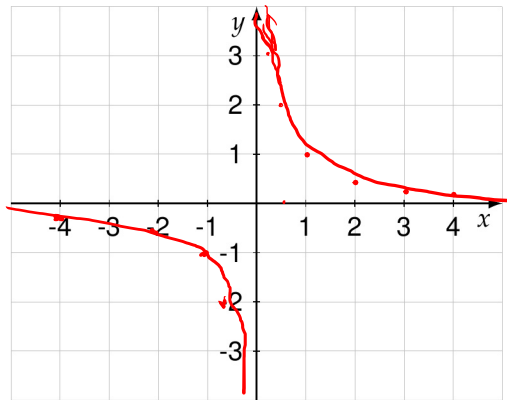
Realne funkcije realne promenljive $f : \mathbb{R} \rightarrow \mathbb{R}$



Naći maksimalni domen i minimalni kodomen realne funkcije realne promenljive $f(x) = \frac{1}{x}$.

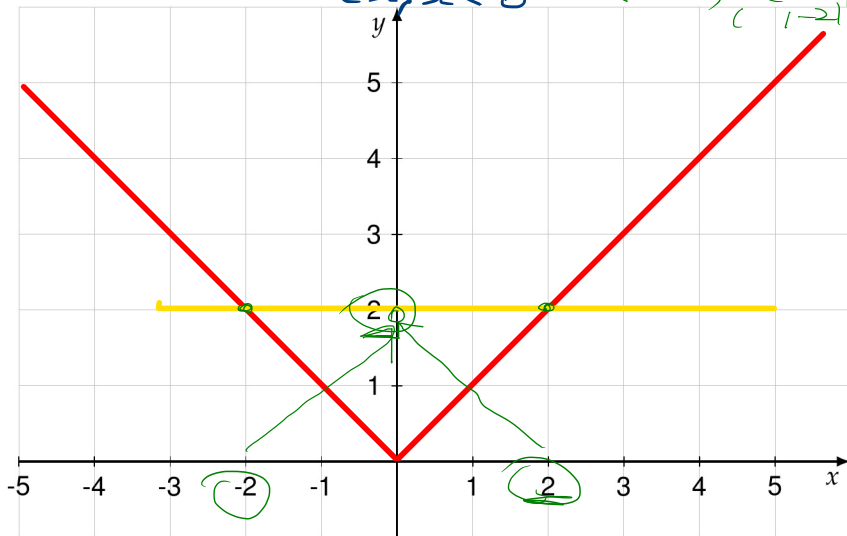
$$\mathcal{D} = \mathbb{R} \setminus \{0\} = (-\infty, 0) \cup (0, +\infty) \quad \mathcal{R} = \mathbb{R} \setminus \{0\}$$

Skicirati u koordinatnom sistemu ordinatni skup tačaka funkcije $y = f(x)$.



Skicirati grafik funkcije $y = |x| = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$

$(2, 2)$ $(-2, 2)$
 $(-2, 2) \rightarrow 2$



Skicirati grafike funkcija $y_1 = x^2$, $y_2 = x^2 - 3$, $y_3 = 2 - x^2$, $y_4 = \sqrt{x}$: $[0, +\infty)$

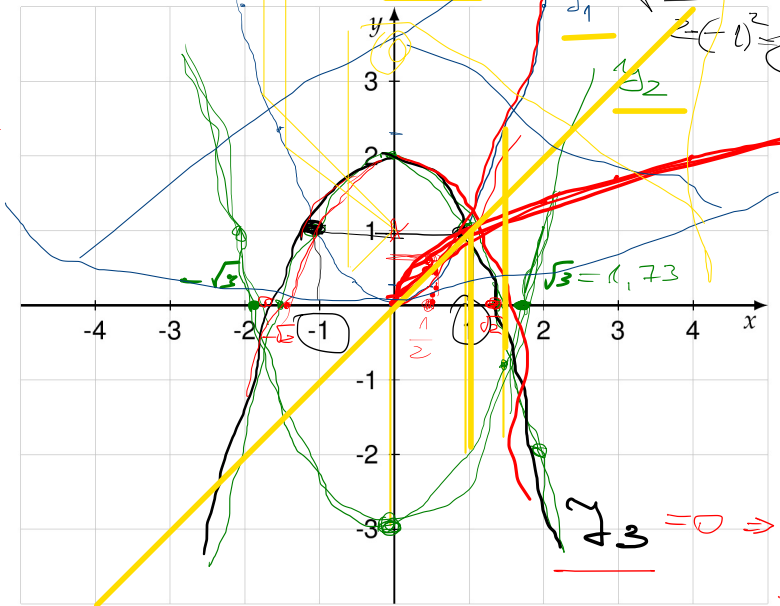
$$\sqrt{0,5} =$$

$$\sqrt{\frac{1}{2}} = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$$

$$= \frac{\sqrt{2}}{2}$$

$$= \frac{1,41}{2}$$

$$= 0,707$$



$$2 \mapsto \sqrt{2}$$

$$4 \mapsto 2$$

$$\downarrow$$

$$x \mapsto \sqrt{x}$$

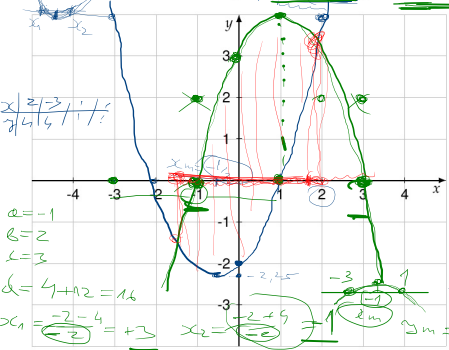
$$(y_4)$$

$$\sqrt{3} = 0 \Rightarrow x = \sqrt{2} = 1,41$$

$$\checkmark$$

$$x = -\sqrt{2}$$

Skicirati grafike funkcija $y_1 = x^2 + x - 2$, $y_2 = -x^2 + 2x + 3$ $ax^2 + bx + c = f$



$$x^2 + x - 2 = 0$$

$$a=1 \quad b=1 \quad c=-2$$

$$\Delta = b^2 - 4ac = 1 - 4(-2) = 1 + 8 = 9$$

$$x_1 = \frac{-1 - 3}{2} = -2$$

$$x_2 = \frac{-1 + 3}{2} = 1$$

$$y_m = \frac{1}{4} \cdot \frac{1}{2} - 2 = -\frac{3}{4} = -0,75$$

$a=-1$
 $b=2$
 $c=3$

$\Delta = 4 + 12 = 16$

$x_1 = \frac{-2 - 4}{-2} = 3$ $x_2 = \frac{-2 + 4}{-2} = -1$ $y_m = 1 - 2 + 3 = 2$

Rešiti nejednačinu $x^2 + x - 2 < -x^2 + 2x + 3$

$$x^2 + x - 2 + x^2 - 2x - 3 < 0$$

$$2x^2 - x - 5 < 0$$

$a=2$
 $b=-1$
 $c=-5$

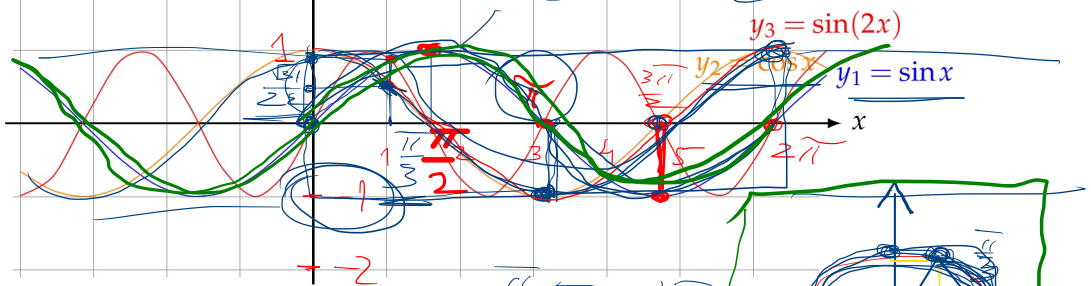
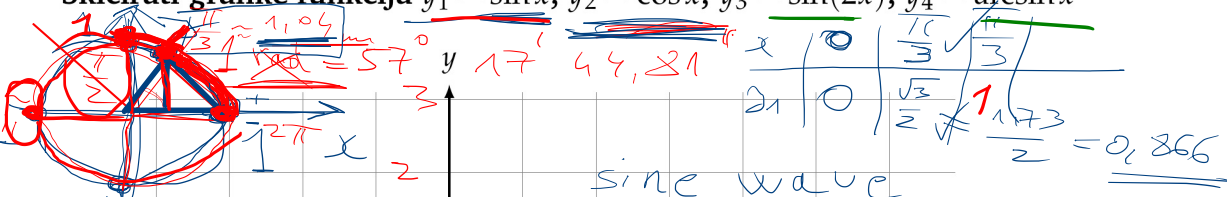
$$x \in \left(\frac{1 - \sqrt{41}}{4}, \frac{1 + \sqrt{41}}{4} \right)$$

$$\Delta = \sqrt{1 + 40} = \sqrt{41} \approx 6,4$$

$$x_1 = \frac{1 - \sqrt{41}}{4} = -1,35 \quad x_2 = 1,25$$

$$x_2 = \frac{1 + \sqrt{41}}{4}$$

Skicirati grafike funkcija $y_1 = \sin x$, $y_2 = \cos x$, $y_3 = \sin(2x)$, $y_4 = \arcsin x$



Kotirati na grafiku bitne tačke.

x	0	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	π
$\cos x$	1	$\frac{1}{2}$	0	$-\frac{1}{2}$	-1
y_2	1	$\frac{1}{2}$	0	$-\frac{1}{2}$	-1

