Domena i svojstva realnih funkcija realne varijable

MATEMATIKA ZA EKONOMISTE 1

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Sadržaj

prvi zadatak

Zadatak 1

Odredite domene i nultočke sljedećih funkcija:

a) $f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1$

b) $g(x) = (2 + x - x^2)^{\frac{1}{5}}$

c) $h(x) = \log\left(10^{x-1} - 5\right)$

d) $k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}$

$$f(x) = \sqrt[4]{\frac{x-3}{x+2}} - 2 - 1$$

Rješenje

a) domena

$$f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1$$

Rješenje

a) domena

$$\frac{x-3}{x+2} - 2 \geqslant 0$$

$$\boxed{f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1}$$

Rješenje

a) domena

$$x + 2 \neq 0$$

uključeno u ovom uvjetu

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Rješenje

a) **domena**

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$$\frac{\qquad\qquad}{x+2}$$

$$\boxed{f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1}$$

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Rješenje

a) domena

$$\frac{x-3}{x+2} - 2 \geqslant 0$$

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$$\frac{x-3}{\qquad x+2 \qquad}$$

$$f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1$$

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Rješenje

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$$\frac{x-3}{x+2} - 2 \geqslant 0$$

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

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$$\boxed{f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1}$$

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$x+2$		$-$		$-$		$+$	
$\frac{-x-7}{x+2}$		$-$		$+$		$-$	

RJEŠENJE:

$$\boxed{f(x)=\sqrt[4]{\frac{x-3}{x+2}-2}-1}$$

$$x+2\neq 0$$

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$-\infty \quad -7 \quad -2 \quad +\infty$

$-x-7$	$+$	$-$	$-$
$x+2$	$-$	$-$	$+$
$\frac{-x-7}{x+2}$	$-$	⊕	$-$

RJEŠENJE:

$$f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1$$

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RJEŠENJE: $x \in [-7, -2\rangle$

$$f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1$$

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RJEŠENJE: $x \in [-7, -2\rangle$

$$D_f = [-7, -2\rangle$$

nultočke

$$f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1$$

$$D_f = [-7, -2\rangle$$

nultočke

$$f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1$$

$$D_f = [-7, -2\rangle$$

$$\sqrt[4]{\frac{x-3}{x+2} - 2} - 1 = 0$$

nultočke

$$\sqrt[4]{\frac{x-3}{x+2}-2}-1=0$$

$$\sqrt[4]{\frac{x-3}{x+2}-2}=1$$

$$f(x)=\sqrt[4]{\frac{x-3}{x+2}-2}-1$$

$$D_f=[-7,-2\rangle$$

nultočke

$$\sqrt[4]{\frac{x-3}{x+2}-2}-1=0$$

$$\sqrt[4]{\frac{x-3}{x+2}-2}=1 \quad \Big/^{4}$$

$$\boxed{f(x)=\sqrt[4]{\frac{x-3}{x+2}-2}-1}$$

$$\boxed{D_f=[-7,-2\rangle}$$

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$$\frac{x-3}{x+2} - 2$$

nultočke

$$f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1$$

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$$\sqrt[4]{\frac{x-3}{x+2} - 2} - 1 = 0$$

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$$\frac{x-3}{x+2} - 2 =$$

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

$$\frac{x-3}{x+2} = 3$$

nultočke

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$$\sqrt[4]{\frac{x-3}{x+2} - 2} - 1 = 0$$

$$\sqrt[4]{\frac{x-3}{x+2} - 2} = 1 \quad \Big/^{4}$$

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

$$\frac{x-3}{x+2} = 3 \quad \Big/ \cdot (x+2)$$

nultočke

$$\sqrt[4]{\frac{x-3}{x+2}-2}-1=0$$

$$\sqrt[4]{\frac{x-3}{x+2}-2}=1 \Big/^{4}$$

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

$$\frac{x-3}{x+2}=3 \Big/ \cdot (x+2)$$

$$x-3$$

$$f(x)=\sqrt[4]{\frac{x-3}{x+2}-2}-1$$

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$$\sqrt[4]{\frac{x-3}{x+2}-2} - 1 = 0$$

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

$$\frac{x-3}{x+2} = 3 \Big/ \cdot (x+2)$$

$$x - 3 =$$

nultočke

$$f(x) = \sqrt[4]{\frac{x-3}{x+2} - 2} - 1$$

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$$\frac{x-3}{x+2} = 3 \Big/ \cdot (x+2)$$

$$x - 3 = 3x + 6$$

nultočke

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$$\sqrt[4]{\frac{x-3}{x+2} - 2} - 1 = 0$$

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

$$\frac{x-3}{x+2} = 3 \quad \Big/ \cdot (x+2)$$

$$x - 3 = 3x + 6$$

$$-2x = 9$$

nultočke

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

$$\frac{x-3}{x+2} = 3 \Big/ \cdot (x+2)$$

$$x - 3 = 3x + 6$$

$$-2x = 9$$

$$x = -\frac{9}{2}$$

nultočke

$$\sqrt[4]{\frac{x-3}{x+2}-2}-1=0$$

$$\sqrt[4]{\frac{x-3}{x+2}-2}=1 \Big/^{4}$$

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

$$\frac{x-3}{x+2}=3 \Big/ \cdot (x+2)$$

$$x-3=3x+6$$

$$-2x=9$$

$$\boxed{x=-\frac{9}{2}}$$

$$f(x)=\sqrt[4]{\frac{x-3}{x+2}-2}-1$$

$$D_f=[-7,-2\rangle$$

nultočke

$$f(x) = \sqrt[4]{\frac{x-3}{x+2}-2}-1$$

$$D_f = [-7, -2\rangle$$

$$\sqrt[4]{\frac{x-3}{x+2}-2}-1=0$$

$$\sqrt[4]{\frac{x-3}{x+2}-2}=1 \Big/^{4}$$

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jest nultočka
jer pripada domeni

b) domena

$$\boxed{g(x) = (2 + x - x^2)^{\frac{1}{5}}}$$

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$D_g = \mathbb{R}$ ⟿ neparni korijen je definiran za sve realne brojeve

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$D_g = \mathbb{R}$ $\leftsquigarrow$ neparni korijen je definiran za sve realne brojeve

nultočke

$$\sqrt[5]{2 + x - x^2} = 0$$

$$\boxed{g(x) = \left(2 + x - x^2\right)^{\frac{1}{5}}}$$

b) **domena**

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

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b) **domena**

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$D_g = \mathbb{R}$ ⟵ neparni korijen je definiran za sve realne brojeve

nultočke

$$ax^2 + bx + c = 0$$

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\sqrt[5]{2 + x - x^2} = 0 \,/\, ^5$$

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$$x_{1,2} = \frac{-1 \pm \sqrt{1^2 - 4 \cdot (-1) \cdot 2}}{2 \cdot (-1)}$$

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$$x_{1,2} = \frac{-1 \pm 3}{-2}$$

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c) domena

$$h(x) = \log\left(10^{x-1} - 5\right)$$

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$10^{x-1} - 5 > 0$

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$a^x > a^y \ \Leftrightarrow \ x > y$

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nultočke

$$\log\left(10^{x-1} - 5\right) = 0$$
$$10^{x-1} - 5 = 10^0$$
$$10^{x-1} = 6$$

$\log_a x = b \rightsquigarrow x = a^b$

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$\log = \log_{10}$

$h(x) = \log\left(10^{x-1} - 5\right)$

$$
\begin{aligned}
10^{x-1} - 5 &> 0 \\
10^{x-1} &> 5 \\
10^{x-1} &> 10^{\log 5} \\
x - 1 &> \log 5 \\
x &> 1 + \log 5
\end{aligned}
$$

Ako je $a > 1$

$a^x > a^y \iff x > y$

Ako je $0 < a < 1$

$a^x > a^y \iff x < y$

nultočke

$$\boxed{D_h = \langle 1 + \log 5, +\infty \rangle}$$

$$
\begin{aligned}
\log\left(10^{x-1} - 5\right) &= 0 \\
10^{x-1} - 5 &= 10^0 \\
10^{x-1} &= 6 \\
x - 1 &= \log 6 \\
x &= 1 + \log 6
\end{aligned}
$$

$\log_a x = b \rightsquigarrow x = a^b$

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c) **domena**

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jest nultočka jer pripada domeni

Ako je $a > 1$

$$a^x > a^y \iff x > y$$

Ako je $0 < a < 1$

$$a^x > a^y \iff x < y$$

$$\log_a x = b \rightsquigarrow x = a^b$$

$$a^x = b \rightsquigarrow x = \log_a b$$

$$\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$$

d) domena

$$\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$$

d) domena

- $x + 2 > 0$

$$\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$$

d) domena

- $x + 2 > 0 \leftsquigarrow$ zbog $\log_{\frac{1}{2}}$

$$\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$$

d) domena

- $x + 2 > 0$ $\leftarrow\!\!\rightsquigarrow$ zbog $\log_{\frac{1}{2}}$
- $\log_{\frac{1}{2}}(x+2) \geqslant 0$

$$\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$$

d) $\boxed{\text{domena}}$

- $x + 2 > 0 \leftsquigarrow$ zbog $\log_{\frac{1}{2}}$
- $\log_{\frac{1}{2}}(x+2) \geqslant 0 \leftsquigarrow$ zbog $\sqrt{}$

$$\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$$

d) domena

- $x + 2 > 0$ $\leftarrow\!\!\!\sim\!\!\sim$ zbog $\log_{\frac{1}{2}}$
- $\log_{\frac{1}{2}}(x+2) \geqslant 0$ $\leftarrow\!\!\!\sim\!\!\sim$ zbog $\sqrt{}$

$$x + 2 > 0$$

$$\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$$

d) domena

- $x + 2 > 0 \leftarrow\!\!\sim\!\!\sim$ zbog $\log_{\frac{1}{2}}$
- $\log_{\frac{1}{2}}(x+2) \geqslant 0 \leftarrow\!\!\sim\!\!\sim$ zbog $\sqrt{}$

$$x + 2 > 0$$

$$x > -2$$

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- $x+2>0 \leftsquigarrow$ zbog $\log_{\frac{1}{2}}$
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$$x+2>0$$

$$\boxed{x>-2}$$

$$\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$$

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- $\log_{\frac{1}{2}}(x+2) \geqslant 0 \leftsquigarrow$ zbog $\sqrt{}$

$$x+2>0$$

$$\boxed{x>-2}$$

$$\log_{\frac{1}{2}}(x+2) \geqslant 0$$

$\boxed{\log_a a^x = x}$ $\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$

d) domena

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- $\log_{\frac{1}{2}}(x+2) \geqslant 0 \leftsquigarrow$ zbog $\sqrt{}$

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$$\log_{\frac{1}{2}}(x+2) \geqslant 0$$

$\boxed{\log_a a^x = x}$ $\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$

d) domena

- $x + 2 > 0 \leftarrow$ zbog $\log_{\frac{1}{2}}$
- $\log_{\frac{1}{2}}(x+2) \geqslant 0 \leftarrow$ zbog $\sqrt{}$

$$x + 2 > 0$$

$$\boxed{x > -2}$$

$$\log_{\frac{1}{2}}(x+2) \geqslant 0$$

$$\log_{\frac{1}{2}}(x+2) \geqslant$$

$\boxed{\log_a a^x = x}$ $\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$

d) **domena**

- $x + 2 > 0 \leftsquigarrow$ zbog $\log_{\frac{1}{2}}$
- $\log_{\frac{1}{2}}(x+2) \geqslant 0 \leftsquigarrow$ zbog $\sqrt{}$

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$$\log_{\frac{1}{2}}(x+2) \geqslant 0$$

$$\log_{\frac{1}{2}}(x+2) \geqslant \log_{\frac{1}{2}}\left(\frac{1}{2}\right)^0$$

Ako je $a > 1$

$$\log_a x > \log_a y \;\Leftrightarrow\; x > y$$

$$\boxed{\log_a a^x = x}$$

$$\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$$

d) $\boxed{\text{domena}}$

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$$x + 2 \leqslant \left(\frac{1}{2}\right)^0$$

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$$x + 2 \leqslant 1$$

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$$\log_a x > \log_a y \quad \Leftrightarrow \quad x < y$$

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presjek rješenja

Ako je $0 < a < 1$

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d) domena

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presjek rješenja

$$\boxed{x \in \langle -2, -1]}$$

Ako je $0 < a < 1$

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Ako je $a > 1$

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$$k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}$$

d) domena

- $x + 2 > 0 \leftsquigarrow$ zbog $\log_{\frac{1}{2}}$
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presjek rješenja

$$\boxed{x \in \langle -2, -1]}$$

$$D_k = \langle -2, -1]$$

Ako je $0 < a < 1$

$$\log_a x > \log_a y \iff x < y$$

$$\boxed{k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}}$$

nultočke

$$\boxed{D_k = \langle -2, -1]}$$

$$k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}$$

nultočke

$$D_k = \langle -2, -1]$$

$$\sqrt{\log_{\frac{1}{2}}(x+2)} = 0$$

$$k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}$$

nultočke

$$D_k = \langle -2, -1]$$

$$\sqrt{\log_{\frac{1}{2}}(x+2)} = 0 \;\Big/^{\,2}$$

$$k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}$$

nultočke

$$D_k = \langle -2, -1]$$

$$\sqrt{\log_{\frac{1}{2}}(x+2)} = 0 \;\Big/^{2}$$

$$\log_{\frac{1}{2}}(x+2) = 0$$

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nultočke

$$\boxed{D_k = \langle -2, -1]}$$

$$\sqrt{\log_{\frac{1}{2}}(x+2)} = 0 \;\Big/^{2}$$

$$\log_{\frac{1}{2}}(x+2) = 0$$

$$\log_a x = b \rightsquigarrow x = a^b$$

$$k(x) = \sqrt{\log_{\frac{1}{2}} (x+2)}$$

nultočke

$$D_k = \langle -2, -1]$$

$$\sqrt{\log_{\frac{1}{2}} (x+2)} = 0 \ \Big/^{2}$$

$$\log_{\frac{1}{2}} (x+2) = 0$$

$$x + 2 =$$

$$\log_a x = b \rightsquigarrow x = a^b$$

$$k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}$$

nultočke

$$D_k = \langle -2, -1]$$

$$\sqrt{\log_{\frac{1}{2}}(x+2)} = 0 \; \Big/^{2}$$

$$\log_{\frac{1}{2}}(x+2) = 0$$

$$x + 2 = \left(\frac{1}{2}\right)^{0}$$

$$\log_a x = b \rightsquigarrow x = a^b$$

$$k(x) = \sqrt{\log_{\frac{1}{2}}(x+2)}$$

$$D_k = \langle -2, -1]$$

nultočke

$$\sqrt{\log_{\frac{1}{2}}(x+2)} = 0 \;\Big/^{2}$$

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$$x + 2 = \left(\frac{1}{2}\right)^0$$

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nultočke

$$\boxed{D_k = \langle -2, -1]}$$

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nultočke

$$\sqrt{\log_{\frac{1}{2}}(x+2)} = 0 \;\Big/^{2}$$

$$\log_{\frac{1}{2}}(x+2) = 0$$

$$x + 2 = \left(\frac{1}{2}\right)^{0}$$

$$x + 2 = 1$$

$$\boxed{x = -1}$$

jest nultočka
jer pripada domeni

$$\log_a x = b \rightsquigarrow x = a^b$$

drugi zadatak

Zadatak 2

Zadane su funkcije $f(x) = \ln(x-3)$ *i* $g(x) = x^2 + x + 1$.

a) *Odredite pravila pridruživanja funkcija* $f \circ g$ *i* $g \circ f$.

b) *Na kojim su domenama od funkcija* f *i* g *kompozicije* $f \circ g$ *i* $g \circ f$ *dobro definirane?*

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x - 3)}$

Rješenje

a)

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

$\boxed{\ln = \log_e}$

Rješenje

a)

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

$\boxed{\ln = \log_e}$

Rješenje

a)

$$(f \circ g)(x) =$$

$$\boxed{g(x) = x^2 + x + 1} \quad \boxed{f(x) = \ln(x-3)}$$

$$\boxed{\ln = \log_e}$$

Rješenje

a)

$$(f \circ g)(x) = f\left(\qquad \right)$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

$\boxed{\ln = \log_e}$

Rješenje

a)

$$(f \circ g)(x) = f\big(g(x)\big)$$

$$\boxed{g(x) = x^2 + x + 1} \quad \boxed{f(x) = \ln(x-3)}$$

Rješenje

$$\boxed{\ln = \log_e}$$

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\Big(\qquad\qquad \Big)$$

$$\boxed{g(x) = x^2 + x + 1} \quad \boxed{f(x) = \ln(x - 3)}$$

$$\boxed{\ln = \log_e}$$

Rješenje

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\big(x^2 + x + 1\big)$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x - 3)}$

Rješenje

$\boxed{\ln = \log_e}$

a)

$$(f \circ g)(x) = f\left(g(x)\right) = f\left(x^2 + x + 1\right) =$$

$$= \ln\left(\qquad\qquad\qquad\qquad \right)$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x - 3)}$

$\boxed{\ln = \log_e}$

Rješenje

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\left(x^2 + x + 1\right) =$$

$$= \ln\big((x^2 + x + 1) \qquad \big)$$

$$\boxed{g(x) = x^2 + x + 1} \quad \boxed{f(x) = \ln(x - 3)}$$

$$\boxed{\ln = \log_e}$$

Rješenje

a)

$$(f \circ g)(x) = f\left(g(x)\right) = f\left(x^2 + x + 1\right) =$$

$$= \ln\left((x^2 + x + 1) - 3\right)$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

Rješenje

$\boxed{\ln = \log_e}$

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\left(x^2 + x + 1\right) =$$

$$= \ln\big((x^2 + x + 1) - 3\big) = \ln\left(x^2 + x - 2\right)$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

Rješenje

$\boxed{\ln = \log_e}$

a)

$$(f \circ g)(x) = f(g(x)) = f(x^2 + x + 1) = \\ = \ln((x^2 + x + 1) - 3) = \ln(x^2 + x - 2)$$

$$(g \circ f)(x) =$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x - 3)}$

Rješenje

$\boxed{\ln = \log_e}$

a)

$$(f \circ g)(x) = f\left(g(x)\right) = f\left(x^2 + x + 1\right) =$$

$$= \ln\left((x^2 + x + 1) - 3\right) = \ln\left(x^2 + x - 2\right)$$

$$(g \circ f)(x) = g\left(\qquad \right)$$

$g(x) = x^2 + x + 1$ $f(x) = \ln(x - 3)$

Rješenje

$\ln = \log_e$

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\left(x^2 + x + 1\right) =$$
$$= \ln\big((x^2 + x + 1) - 3\big) = \ln\left(x^2 + x - 2\right)$$

$$(g \circ f)(x) = g\big(f(x)\big)$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

$\boxed{\ln = \log_e}$

Rješenje

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\big(x^2 + x + 1\big) =$$

$$= \ln\big((x^2 + x + 1) - 3\big) = \ln\big(x^2 + x - 2\big)$$

$$(g \circ f)(x) = g\big(f(x)\big) = g\big(\qquad\qquad\big)$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x - 3)}$

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Rješenje

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\big(x^2 + x + 1\big) =$$
$$= \ln\big((x^2 + x + 1) - 3\big) = \ln\big(x^2 + x - 2\big)$$

$$(g \circ f)(x) = g\big(f(x)\big) = g\big(\ln(x - 3)\big)$$

$$\boxed{g(x) = x^2 + x + 1} \quad \boxed{f(x) = \ln(x-3)}$$

$$\boxed{\ln = \log_e}$$

Rješenje

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\left(x^2 + x + 1\right) =$$

$$= \ln\big((x^2 + x + 1) - 3\big) = \ln\left(x^2 + x - 2\right)$$

$$(g \circ f)(x) = g\big(f(x)\big) = g\big(\ln(x-3)\big) =$$

$$= \Big(\qquad\qquad \Big)^2$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

$\boxed{\ln = \log_e}$

Rješenje

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\left(x^2 + x + 1\right) =$$

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$$(g \circ f)(x) = g\big(f(x)\big) = g\big(\ln(x-3)\big) =$$

$$= \big(\ln(x-3)\big)^2$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

$\boxed{\ln = \log_e}$

Rješenje

a)

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$$(g \circ f)(x) = g\big(f(x)\big) = g\big(\ln(x-3)\big) =$$

$$= \big(\ln(x-3)\big)^2 +$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

$\boxed{\ln = \log_e}$

Rješenje

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\big(x^2 + x + 1\big) =$$

$$= \ln\big((x^2 + x + 1) - 3\big) = \ln\big(x^2 + x - 2\big)$$

$$(g \circ f)(x) = g\big(f(x)\big) = g\big(\ln(x-3)\big) =$$

$$= \big(\ln(x-3)\big)^2 + \ln(x-3)$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

$\boxed{\ln = \log_e}$

Rješenje

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\left(x^2 + x + 1\right) =$$

$$= \ln\big((x^2 + x + 1) - 3\big) = \ln\left(x^2 + x - 2\right)$$

$$(g \circ f)(x) = g\big(f(x)\big) = g\big(\ln(x-3)\big) =$$

$$= \big(\ln(x-3)\big)^2 + \ln(x-3) + 1$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x - 3)}$

$\boxed{\ln = \log_e}$

Rješenje

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\left(x^2 + x + 1\right) =$$

$$= \ln\big((x^2 + x + 1) - 3\big) = \ln\left(x^2 + x - 2\right)$$

$$(g \circ f)(x) = g\big(f(x)\big) = g\big(\ln(x - 3)\big) =$$

$$= \big(\ln(x - 3)\big)^2 + \ln(x - 3) + 1 =$$

$$= \ln^2(x - 3)$$

$$\boxed{\log_a^k x = \big(\log_a x\big)^k}$$

$$\boxed{g(x) = x^2 + x + 1} \quad \boxed{f(x) = \ln(x-3)}$$

Rješenje

$$\boxed{\ln = \log_e}$$

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\left(x^2 + x + 1\right) =$$

$$= \ln\big((x^2 + x + 1) - 3\big) = \ln\left(x^2 + x - 2\right)$$

$$(g \circ f)(x) = g\big(f(x)\big) = g\big(\ln(x-3)\big) =$$

$$= \big(\ln(x-3)\big)^2 + \ln(x-3) + 1 =$$

$$= \ln^2(x-3) + \ln(x-3)$$

$$\boxed{\log_a^k x = \left(\log_a x\right)^k}$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

$\boxed{\ln = \log_e}$

Rješenje

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\left(x^2 + x + 1\right) =$$

$$= \ln\big((x^2 + x + 1) - 3\big) = \ln\left(x^2 + x - 2\right)$$

$$(g \circ f)(x) = g\big(f(x)\big) = g\big(\ln(x-3)\big) =$$

$$= \big(\ln(x-3)\big)^2 + \ln(x-3) + 1 =$$

$$= \ln^2(x-3) + \ln(x-3) + 1$$

$$\boxed{\log_a^k x = \big(\log_a x\big)^k}$$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{f(x) = \ln(x-3)}$

Rješenje

$\boxed{\ln = \log_e}$

a)

$$(f \circ g)(x) = f\big(g(x)\big) = f\left(x^2 + x + 1\right) =$$

$$= \ln\left(\left(x^2 + x + 1\right) - 3\right) = \ln\left(x^2 + x - 2\right)$$

$$(g \circ f)(x) = g\big(f(x)\big) = g\big(\ln(x-3)\big) =$$

$$= \big(\ln(x-3)\big)^2 + \ln(x-3) + 1 =$$

$$= \ln^2(x-3) + \ln(x-3) + 1$$

Budite jako oprezni

$$\big(\log_a x\big)^k \neq \log_a x^k$$

$$\log_a^k x = \big(\log_a x\big)^k$$

$\boxed{f(x) = \ln(x-3)}$ $\boxed{(g \circ f)(x) = \ln^2(x-3) + \ln(x-3) + 1}$

$\boxed{g(x) = x^2 + x + 1}$ $\boxed{(f \circ g)(x) = \ln\left(x^2 + x - 2\right)}$

b)

$$\boxed{f(x) = \ln(x-3)} \quad \boxed{(g \circ f)(x) = \ln^2(x-3) + \ln(x-3) + 1}$$

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b) domena funkcije $g \circ f$

$\boxed{f(x) = \ln(x-3)}$ $\boxed{(g \circ f)(x) = \ln^2(x-3) + \ln(x-3) + 1}$

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b) $\boxed{\text{domena funkcije } g \circ f}$

$x - 3 > 0$

$\boxed{f(x) = \ln(x-3)}$ $\boxed{(g \circ f)(x) = \ln^2(x-3) + \ln(x-3) + 1}$

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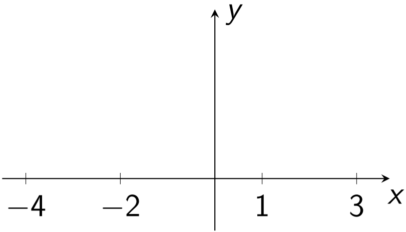

$\boxed{f(x) = \ln(x-3)}$ $\boxed{(g \circ f)(x) = \ln^2(x-3) + \ln(x-3) + 1}$

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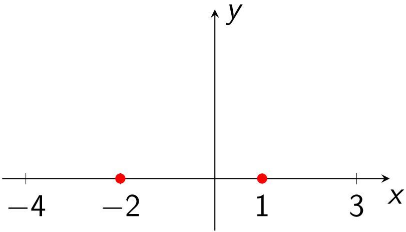

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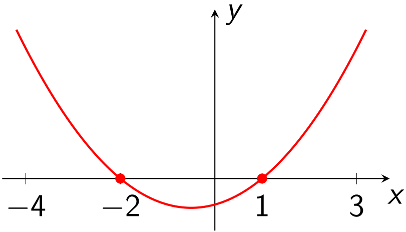

$$x^2 + x - 2 > 0$$

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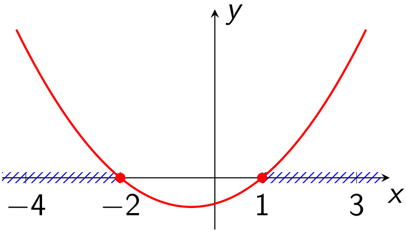

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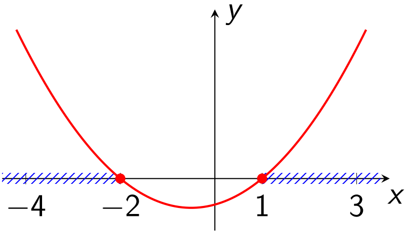

$$D_{f \circ g} = \langle -\infty, -2 \rangle \cup \langle 1, +\infty \rangle$$

$$\boxed{f(x) = \ln(x-3)} \quad \boxed{(g \circ f)(x) = \ln^2(x-3) + \ln(x-3) + 1}$$

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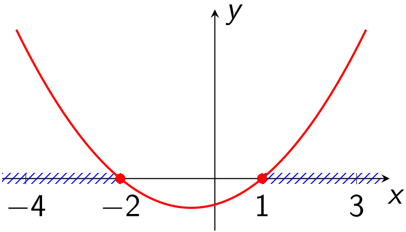

$$D_{f \circ g} = \langle -\infty, -2 \rangle \cup \langle 1, +\infty \rangle$$

Funkcije f i g moramo gledati na sljedeći način:

$\boxed{f(x) = \ln(x-3)}$ $\boxed{(g \circ f)(x) = \ln^2(x-3) + \ln(x-3) + 1}$

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$\boxed{\operatorname{Im} f \subseteq D_g}$

b) domena funkcije $g \circ f$

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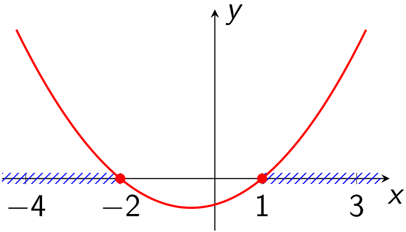

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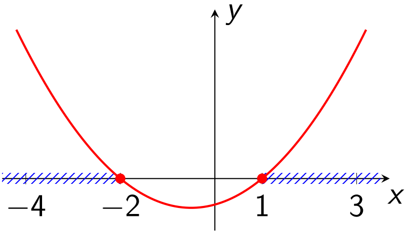

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Funkcije f i g moramo gledati na sljedeći način:

$$f : \langle 3, +\infty \rangle \to \mathbb{R}$$

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b) **domena funkcije $g \circ f$**

$$x - 3 > 0 \rightsquigarrow x > 3$$

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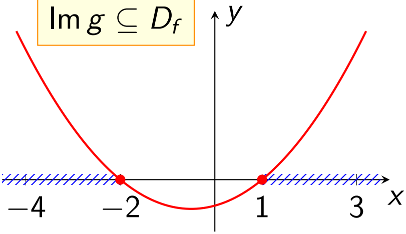

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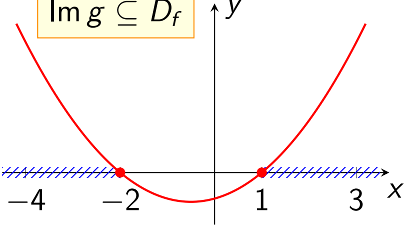


$D_{f\circ g} = \langle -\infty, -2\rangle \cup \langle 1, +\infty\rangle$

Funkcije f i g moramo gledati na sljedeći način:

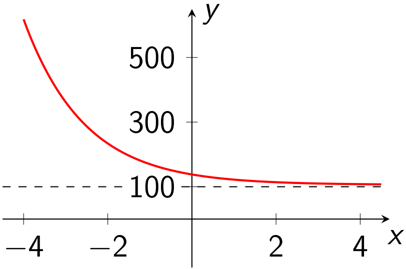
$f : \langle 3, +\infty\rangle \to \mathbb{R}$

$g : \langle -\infty, -2\rangle \cup \langle 1, +\infty\rangle \to \mathbb{R}$

treći zadatak

Zadatak 3

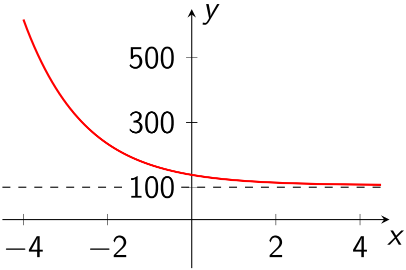
Zadana je funkcija h svojim grafom na donjoj slici.



Ispitajte monotonost, omeđenost i parnost funkcije h na temelju njezinog grafa.

Rješenje

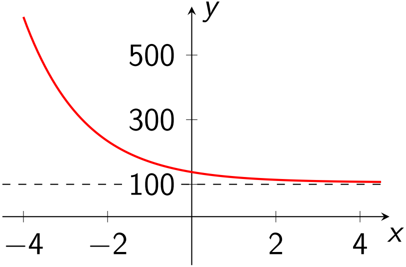
monotonost



Rješenje

monotonost

Funkcija h je monotona funkcija jer strogo pada.

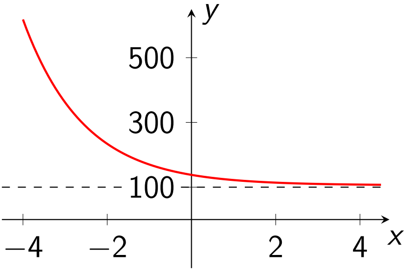


Rješenje

monotonost

Funkcija h je monotona funkcija jer strogo pada.

omeđenost

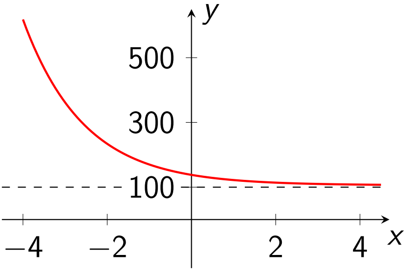


Rješenje

monotonost

Funkcija h je monotona funkcija jer strogo pada.

omeđenost $m \leqslant h(x) \leqslant M$



Rješenje

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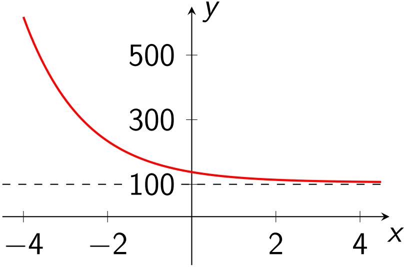
Funkcija h je monotona funkcija jer strogo pada.

omeđenost $m \leqslant h(x) \leqslant M$

Funkcija h nije omeđena odozgo jer je



Rješenje

monotonost

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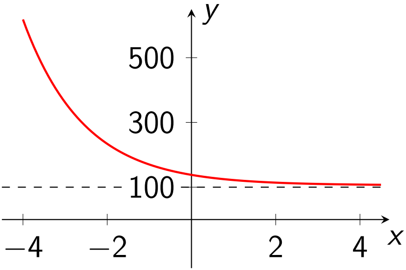
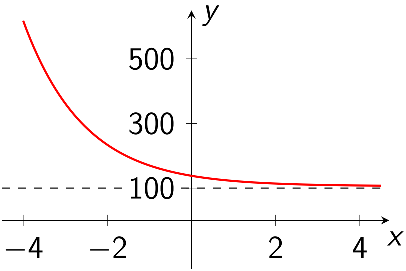
Funkcija h nije omeđena odozgo jer je

$$\lim_{x \to -\infty} h(x) = +\infty.$$



Rješenje



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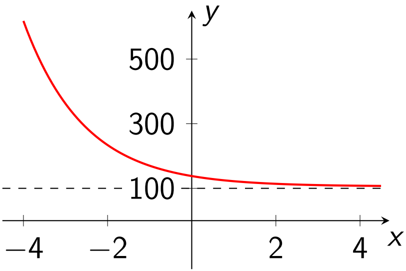
Rješenje



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Funkcija h je monotona funkcija jer strogo pada.

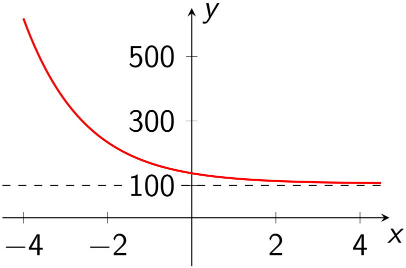
omeđenost $m \leqslant h(x) \leqslant M$

Funkcija h nije omeđena odozgo jer je

$$\lim_{x \to -\infty} h(x) = +\infty.$$

Funkcija h je omeđena odozdo jer je $h(x) \geqslant 100$,

Rješenje



monotonost

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omeđenost $m \leqslant h(x) \leqslant M$

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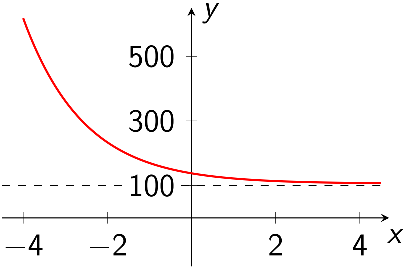
$$\lim_{x \to -\infty} h(x) = +\infty.$$

Funkcija h je omeđena odozdo jer je $h(x) \geqslant 100$, tj. $m = 100$ je jedna donja međa funkcije h.

Rješenje



monotonost

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Funkcija h nije omeđena jer nije omeđena odozgo.

Rješenje

monotonost

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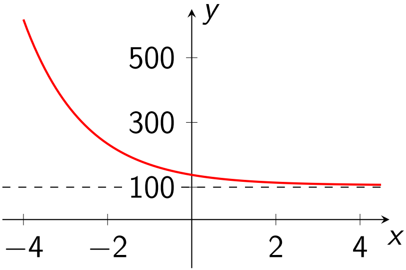

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Funkcija h nije omeđena odozgo jer je

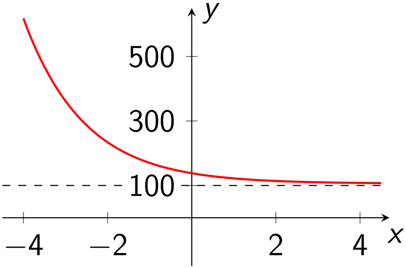
$$\lim_{x \to -\infty} h(x) = +\infty.$$

Funkcija h je omeđena odozdo jer je $h(x) \geqslant 100$, tj. $m = 100$ je jedna donja međa funkcije h.

Funkcija h nije omeđena jer nije omeđena odozgo.

parnost/neparnost

Rješenje



monotonost

Funkcija h je monotona funkcija jer strogo pada.

omeđenost $m \leqslant h(x) \leqslant M$

Funkcija h nije omeđena odozgo jer je

$$\lim_{x \to -\infty} h(x) = +\infty.$$

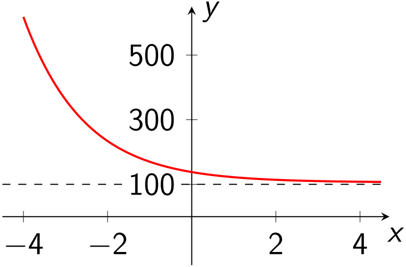
Funkcija h je omeđena odozdo jer je $h(x) \geqslant 100$, tj. $m = 100$ je jedna donja međa funkcije h.

Funkcija h nije omeđena jer nije omeđena odozgo.

parnost/neparnost

Funkcija h nije parna jer

Rješenje



monotonost

Funkcija h je monotona funkcija jer strogo pada.

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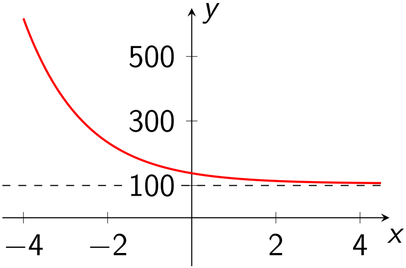
parnost/neparnost

Funkcija h nije parna jer njezin graf nije simetričan s obzirom na os y.

Rješenje



monotonost

Funkcija h je monotona funkcija jer strogo pada.

omeđenost $m \leqslant h(x) \leqslant M$

Funkcija h nije omeđena odozgo jer je

$$\lim_{x \to -\infty} h(x) = +\infty.$$

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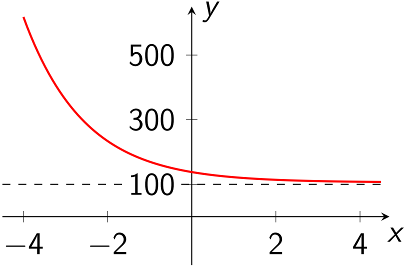
Funkcija h nije omeđena jer nije omeđena odozgo.

parnost/neparnost

Funkcija h nije parna jer njezin graf nije simetričan s obzirom na os y.

Funkcija h nije neparna jer

Rješenje



monotonost

Funkcija h je monotona funkcija jer strogo pada.

omeđenost $m \leqslant h(x) \leqslant M$

Funkcija h nije omeđena odozgo jer je

$$\lim_{x \to -\infty} h(x) = +\infty.$$

Funkcija h je omeđena odozdo jer je $h(x) \geqslant 100$, tj. $m = 100$ je jedna donja međa funkcije h.

Funkcija h nije omeđena jer nije omeđena odozgo.

parnost/neparnost

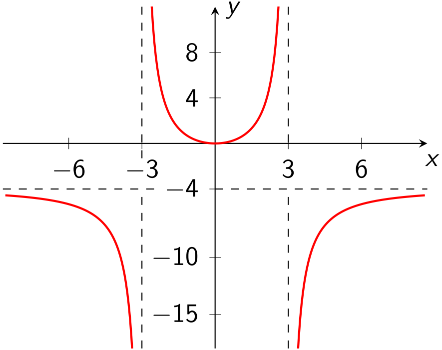
Funkcija h nije parna jer njezin graf nije simetričan s obzirom na os y.

Funkcija h nije neparna jer njezin graf nije simetričan s obzirom na ishodište koordinatnog sustava.

četvrti zadatak

Zadatak 4

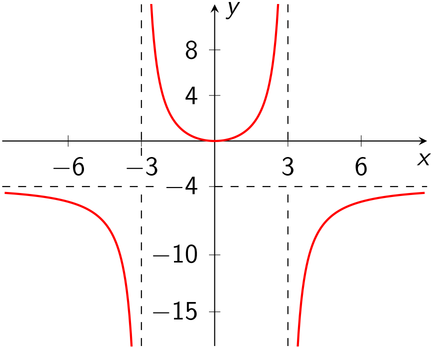
Zadana je funkcija f svojim grafom na donjoj slici.



Ispitajte monotonost, omeđenost i parnost funkcije f na temelju njezinog grafa.

Rješenje

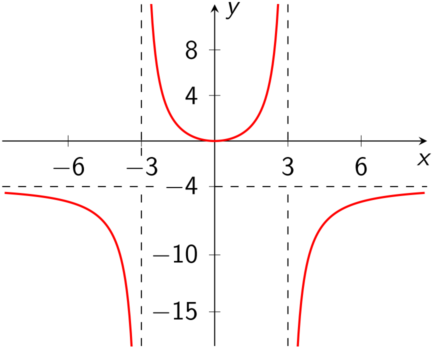
monotonost



Rješenje

monotonost

Funkcija f raste na intervalima $\langle 0, 3\rangle$ i $\langle 3, +\infty\rangle$.

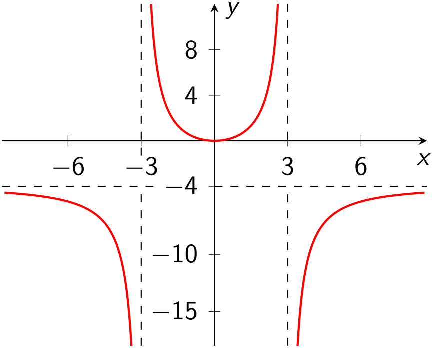


Rješenje

monotonost

Funkcija f raste na intervalima $\langle 0, 3\rangle$ i $\langle 3, +\infty\rangle$.

Funkcija f pada na intervalima $\langle -\infty, -3\rangle$ i $\langle -3, 0\rangle$.



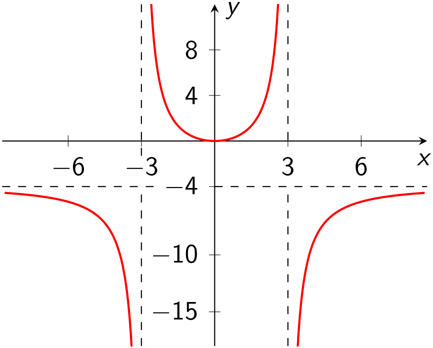
Rješenje

monotonost

Funkcija f raste na intervalima $\langle 0, 3\rangle$ i $\langle 3, +\infty\rangle$.

Funkcija f pada na intervalima $\langle -\infty, -3\rangle$ i $\langle -3, 0\rangle$.

Funkcija f nije monotona funkcija na svojoj domeni.



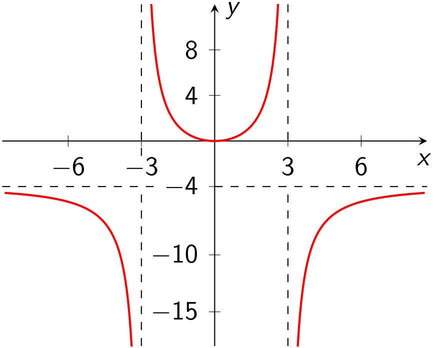
Rješenje

monotonost

Funkcija f raste na intervalima $\langle 0, 3\rangle$ i $\langle 3, +\infty\rangle$.

Funkcija f pada na intervalima $\langle -\infty, -3\rangle$ i $\langle -3, 0\rangle$.

Funkcija f nije monotona funkcija na svojoj domeni.



Budite iznimno oprezni

Funkcija f ne raste na skupu $\langle 0, 3\rangle \cup \langle 3, +\infty\rangle$.

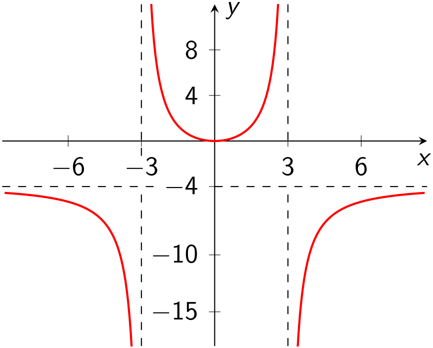
Rješenje

monotonost

Funkcija f raste na intervalima $\langle 0, 3\rangle$ i $\langle 3, +\infty\rangle$.

Funkcija f pada na intervalima $\langle -\infty, -3\rangle$ i $\langle -3, 0\rangle$.

Funkcija f nije monotona funkcija na svojoj domeni.



Budite iznimno oprezni

Funkcija f ne raste na skupu $\langle 0, 3\rangle \cup \langle 3, +\infty\rangle$.

Budite iznimno oprezni

Funkcija f ne pada na skupu $\langle -\infty, -3\rangle \cup \langle -3, 0\rangle$.

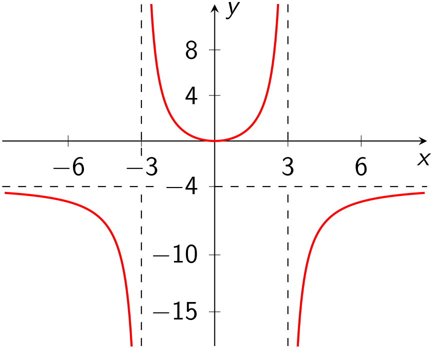
Rješenje

monotonost

Funkcija f raste na intervalima $\langle 0,3\rangle$ i $\langle 3,+\infty\rangle$.

Funkcija f pada na intervalima $\langle -\infty,-3\rangle$ i $\langle -3,0\rangle$.

Funkcija f nije monotona funkcija na svojoj domeni.



parnost/neparnost

Budite iznimno oprezni

Funkcija f ne raste na skupu $\langle 0,3\rangle \cup \langle 3,+\infty\rangle$.

Budite iznimno oprezni

Funkcija f ne pada na skupu $\langle -\infty,-3\rangle \cup \langle -3,0\rangle$.

Rješenje

monotonost

Funkcija f raste na intervalima $\langle 0, 3\rangle$ i $\langle 3, +\infty\rangle$.

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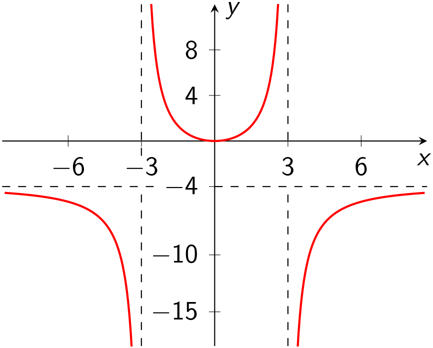


parnost/neparnost

Funkcija f je parna jer je njezin graf simetričan s obzirom na os y.

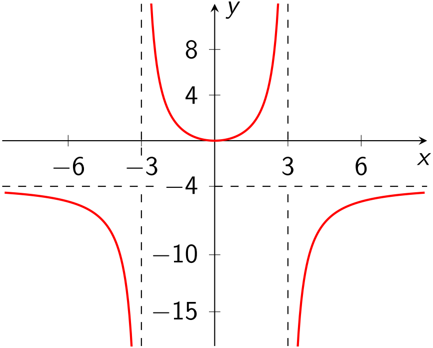
Budite iznimno oprezni

Funkcija f ne raste na skupu $\langle 0, 3\rangle \cup \langle 3, +\infty\rangle$.

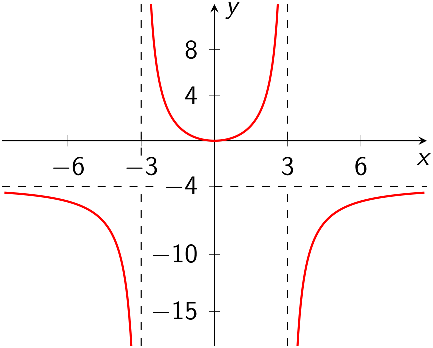
Budite iznimno oprezni

Funkcija f ne pada na skupu $\langle -\infty, -3\rangle \cup \langle -3, 0\rangle$.

omeđenost

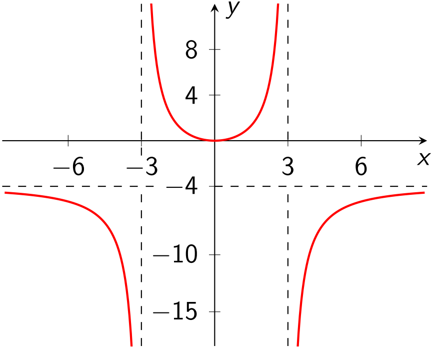


omeđenost $m \leqslant f(x) \leqslant M$



omeđenost $m \leqslant f(x) \leqslant M$

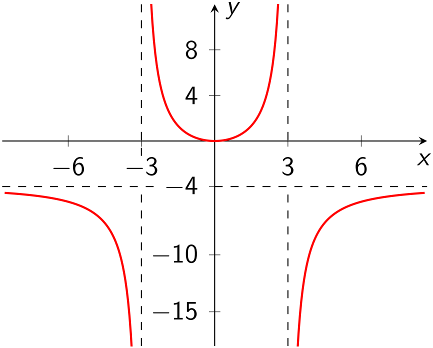
Funkcija f nije omeđena odozgo jer u okolini broja 3 poprima beskonačno velike pozitivne vrijednosti,



omeđenost $m \leqslant f(x) \leqslant M$

Funkcija f nije omeđena odozgo jer u okolini broja 3 poprima beskonačno velike pozitivne vrijednosti, tj.

$$\lim_{x \to 3-} f(x) = +\infty.$$

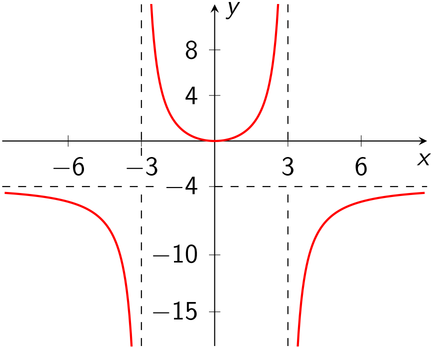


omeđenost $m \leqslant f(x) \leqslant M$

Funkcija f nije omeđena odozgo jer u okolini broja 3 poprima beskonačno velike pozitivne vrijednosti, tj.

$$\lim_{x \to 3-} f(x) = +\infty.$$

Funkcija f nije omeđena odozdo jer u okolini broja 3 poprima beskonačno velike negativne vrijednosti,



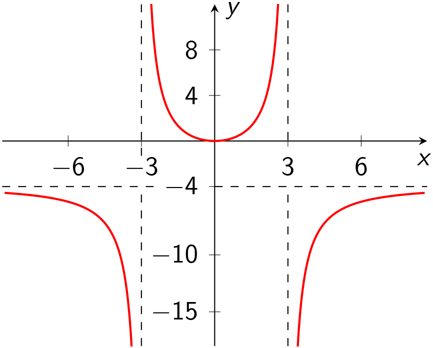
omeđenost $m \leqslant f(x) \leqslant M$

Funkcija f nije omeđena odozgo jer u okolini broja 3 poprima beskonačno velike pozitivne vrijednosti, tj.

$$\lim_{x\to 3-} f(x) = +\infty.$$

Funkcija f nije omeđena odozdo jer u okolini broja 3 poprima beskonačno velike negativne vrijednosti, tj.

$$\lim_{x\to 3+} f(x) = -\infty.$$



omeđenost $m \leqslant f(x) \leqslant M$

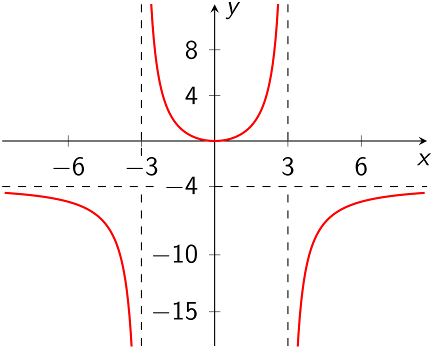
Funkcija f nije omeđena odozgo jer u okolini broja 3 poprima beskonačno velike pozitivne vrijednosti, tj.

$$\lim_{x \to 3-} f(x) = +\infty.$$

Funkcija f nije omeđena odozdo jer u okolini broja 3 poprima beskonačno velike negativne vrijednosti, tj.

$$\lim_{x \to 3+} f(x) = -\infty.$$

Funkcija f nije omeđena jer nije omeđena niti odozgo niti odozdo.



omeđenost $m \leqslant f(x) \leqslant M$

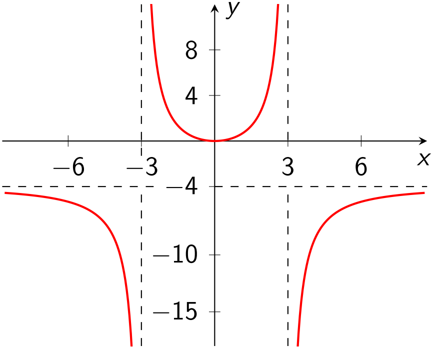
Funkcija f nije omeđena odozgo jer u okolini broja 3 poprima beskonačno velike pozitivne vrijednosti, tj.

$$\lim_{x \to 3-} f(x) = +\infty.$$

Funkcija f nije omeđena odozdo jer u okolini broja 3 poprima beskonačno velike negativne vrijednosti, tj.

$$\lim_{x \to 3+} f(x) = -\infty.$$

Funkcija f nije omeđena jer nije omeđena niti odozgo niti odozdo.



Slično je u okolini broja −3

$$\lim_{x \to -3-} f(x) = -\infty$$

$$\lim_{x \to -3+} f(x) = +\infty$$

peti zadatak

Zadatak 5

Ispitajte parnost sljedećih funkcija:

a) $f(x) = \dfrac{2x^2}{3 - x^2}$

b) $h(x) = 2^{5-x} + 50$

c) $g(x) = \log_4 \dfrac{3 + 2x}{3 - 2x}$

Zadatak 5

Ispitajte parnost sljedećih funkcija:

a) $f(x) = \dfrac{2x^2}{3 - x^2}$

b) $h(x) = 2^{5-x} + 50$

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Parna funkcija

- $x \in D_f \;\Rightarrow\; -x \in D_f$
- $f(-x) = f(x),\ \forall x \in D_f$

Zadatak 5

Ispitajte parnost sljedećih funkcija:

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Parna funkcija

- $x \in D_f \;\Rightarrow\; -x \in D_f$
- $f(-x) = f(x), \ \forall x \in D_f$

Neparna funkcija

- $x \in D_f \;\Rightarrow\; -x \in D_f$
- $f(-x) = -f(x), \ \forall x \in D_f$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena

$$3 - x^2 \neq 0$$

Rješenje

$$\boxed{f(x) = \frac{2x^2}{3 - x^2}}$$

a) $\boxed{\text{domena}}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3$$

Rješenje

$$\boxed{f(x) = \frac{2x^2}{3 - x^2}}$$

a) $\boxed{\text{domena}}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

$$f(-x) =$$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) $\boxed{\text{domena}}$ $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

$$f(-x) = \underline{\hspace{4cm}}$$

Rješenje

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a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

$$f(-x) = \frac{2 \cdot (-x)^2}{}$$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

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Rješenje

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$$f(-x) = \frac{2 \cdot (-x)^2}{3 - (-x)^2} = \underline{\qquad\qquad}$$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) $\boxed{\text{domena}}$ $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

$$f(-x) = \frac{2 \cdot (-x)^2}{3 - (-x)^2} = \frac{2x^2}{}$$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

$$f(-x) = \frac{2 \cdot (-x)^2}{3 - (-x)^2} = \frac{2x^2}{3 - x^2}$$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

$$f(-x) = \frac{2 \cdot (-x)^2}{3 - (-x)^2} = \frac{2x^2}{3 - x^2} = f(x)$$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) **domena** $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$

$$f(-x) = \frac{2 \cdot (-x)^2}{3 - (-x)^2} = \frac{2x^2}{3 - x^2} = f(x)$$

Funkcija f je parna funkcija.

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$

$$f(-x) = \frac{2 \cdot (-x)^2}{3 - (-x)^2} = \frac{2x^2}{3 - x^2} = f(x)$$

Funkcija f je parna funkcija.

$$h(x) = 2^{5-x} + 50$$

b) domena

Rješenje

$$\boxed{f(x)=\frac{2x^2}{3-x^2}}$$

a) $\boxed{\text{domena}}$ $D_f=\mathbb{R}\setminus\{-\sqrt{3},\sqrt{3}\}$

$$3-x^2\neq 0 \rightsquigarrow x^2\neq 3 \rightsquigarrow x\neq\pm\sqrt{3}$$

$$f(-x)=\frac{2\cdot(-x)^2}{3-(-x)^2}=\frac{2x^2}{3-x^2}=f(x)$$

Funkcija f je parna funkcija.

$$\boxed{h(x)=2^{5-x}+50}$$

b) $\boxed{\text{domena}}$ $D_h=\mathbb{R}$

Rješenje

$$\boxed{f(x) = \frac{2x^2}{3 - x^2}}$$

a) $\boxed{\text{domena}}$ $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$

$$f(-x) = \frac{2 \cdot (-x)^2}{3 - (-x)^2} = \frac{2x^2}{3 - x^2} = f(x)$$

Funkcija f je parna funkcija.

$$\boxed{h(x) = 2^{5-x} + 50}$$

b) $\boxed{\text{domena}}$ $D_h = \mathbb{R}$

$$h(-x) =$$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

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Funkcija f je parna funkcija.

$$h(x) = 2^{5-x} + 50$$

b) domena $D_h = \mathbb{R}$

$$h(-x) = 2^{5-(-x)}$$

Rješenje

$$\boxed{f(x) = \frac{2x^2}{3 - x^2}}$$

a) $\boxed{\text{domena}}$ $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$

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$$\boxed{h(x) = 2^{5-x} + 50}$$

b) $\boxed{\text{domena}}$ $D_h = \mathbb{R}$

$$h(-x) = 2^{5-(-x)} + 50$$

Rješenje

$$\boxed{f(x) = \frac{2x^2}{3 - x^2}}$$

a) $\boxed{\text{domena}}$ $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

$$f(-x) = \frac{2 \cdot (-x)^2}{3 - (-x)^2} = \frac{2x^2}{3 - x^2} = f(x)$$

Funkcija f je parna funkcija.

$$\boxed{h(x) = 2^{5-x} + 50}$$

b) $\boxed{\text{domena}}$ $D_h = \mathbb{R}$

$$h(-x) = 2^{5-(-x)} + 50 = 2^{5+x} + 50$$

Rješenje

$$f(x) = \frac{2x^2}{3-x^2}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$

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Rješenje

$$\boxed{f(x) = \frac{2x^2}{3 - x^2}}$$

a) $\boxed{\text{domena}}$ $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

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Funkcija f je parna funkcija.

$$\boxed{h(x) = 2^{5-x} + 50}$$

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$$h(-x) = 2^{5-(-x)} + 50 = 2^{5+x} + 50 \neq \pm h(x)$$

Funkcija h nije niti parna niti neparna.

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$

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Funkcija f je parna funkcija.

$$h(x) = 2^{5-x} + 50$$

b) domena $D_h = \mathbb{R}$

$$h(-x) = 2^{5-(-x)} + 50 = 2^{5+x} + 50 \neq \pm h(x)$$

Funkcija h nije niti parna niti neparna.

Protuprimjer

Rješenje

$$\boxed{f(x) = \frac{2x^2}{3 - x^2}}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$

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Funkcija f je parna funkcija.

$$\boxed{h(x) = 2^{5-x} + 50}$$

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Funkcija h nije niti parna niti neparna.

Protuprimjer

$$h(1) =$$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$

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Funkcija f je parna funkcija.

$$h(x) = 2^{5-x} + 50$$

b) domena $D_h = \mathbb{R}$

$$h(-x) = 2^{5-(-x)} + 50 = 2^{5+x} + 50 \neq \pm h(x)$$

Funkcija h nije niti parna niti neparna.

Protuprimjer

$$h(1) = 2^4 + 50$$

Rješenje

$$\boxed{f(x) = \frac{2x^2}{3 - x^2}}$$

a) **domena** $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

$$f(-x) = \frac{2 \cdot (-x)^2}{3 - (-x)^2} = \frac{2x^2}{3 - x^2} = f(x)$$

Funkcija f je parna funkcija.

$$\boxed{h(x) = 2^{5-x} + 50}$$

b) **domena** $D_h = \mathbb{R}$

$$h(-x) = 2^{5-(-x)} + 50 = 2^{5+x} + 50 \neq \pm h(x)$$

Funkcija h nije niti parna niti neparna.

Protuprimjer

$$h(1) = 2^4 + 50 = 66$$

Rješenje

$$\boxed{f(x) = \frac{2x^2}{3 - x^2}}$$

a) $\boxed{\text{domena}}$ $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

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Funkcija f je parna funkcija.

$$\boxed{h(x) = 2^{5-x} + 50}$$

b) $\boxed{\text{domena}}$ $D_h = \mathbb{R}$

$$h(-x) = 2^{5-(-x)} + 50 = 2^{5+x} + 50 \neq \pm h(x)$$

Funkcija h nije niti parna niti neparna.

$\boxed{\text{Protuprimjer}}$

$$h(1) = 2^4 + 50 = 66, \quad h(-1) =$$

Rješenje

$$f(x) = \frac{2x^2}{3 - x^2}$$

a) domena $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

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Funkcija f je parna funkcija.

$$h(x) = 2^{5-x} + 50$$

b) domena $D_h = \mathbb{R}$

$$h(-x) = 2^{5-(-x)} + 50 = 2^{5+x} + 50 \neq \pm h(x)$$

Funkcija h nije niti parna niti neparna.

Protuprimjer

$$h(1) = 2^4 + 50 = 66, \quad h(-1) = 2^6 + 50$$

Rješenje

$$\boxed{f(x) = \frac{2x^2}{3-x^2}}$$

a) **domena** $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

$$3 - x^2 \neq 0 \rightsquigarrow x^2 \neq 3 \rightsquigarrow x \neq \pm\sqrt{3}$$

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Funkcija h nije niti parna niti neparna.

Protuprimjer

$$h(1) = 2^4 + 50 = 66, \quad h(-1) = 2^6 + 50 = 114$$

Rješenje

$$\boxed{f(x) = \frac{2x^2}{3 - x^2}}$$

a) **domena** $D_f = \mathbb{R} \setminus \{-\sqrt{3}, \sqrt{3}\}$

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Funkcija h nije niti parna niti neparna.

Protuprimjer $h(-1) \neq \pm h(1)$

$$h(1) = 2^4 + 50 = 66, \quad h(-1) = 2^6 + 50 = 114$$

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) domena

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) domena

$$\frac{3+2x}{3-2x} > 0$$

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$$3 + 2x = 0$$

$$g(x) = \log_4 \frac{3+2x}{3-2x}$$

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

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) domena

$$\frac{3+2x}{3-2x} > 0$$

$$3+2x = 0 \qquad 3-2x = 0$$

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$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) **domena**

$$\frac{3+2x}{3-2x} > 0$$

$$3 + 2x = 0 \qquad 3 - 2x = 0$$

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$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

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$3+2x$		

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$3+2x$		
$3-2x$		

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$3+2x$		
$3-2x$		
$\frac{3+2x}{3-2x}$		

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$$3+2x=0 \qquad 3-2x=0$$

$$x=-\frac{3}{2} \qquad x=\frac{3}{2}$$

	$-\infty$	
$3+2x$		
$3-2x$		
$\frac{3+2x}{3-2x}$		

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$x = -\frac{3}{2}$ $\qquad$ $x = \frac{3}{2}$

	$-\infty$	$+\infty$
$3+2x$		
$3-2x$		
$\frac{3+2x}{3-2x}$		

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	$-\infty$	$-\frac{3}{2}$	$+\infty$
$3+2x$			
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	$-\infty$	$-\frac{3}{2}$	$\frac{3}{2}$	$+\infty$
$3+2x$				
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	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$					
$3-2x$							
$\frac{3+2x}{3-2x}$							

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	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$			
$3-2x$							
$\frac{3+2x}{3-2x}$							

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	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$		$+$	
$3-2x$							
$\frac{3+2x}{3-2x}$							

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$-\infty$ $\quad -\frac{3}{2}$ $\quad \frac{3}{2}$ $\quad +\infty$

$3+2x$	$-$	$+$	$+$
$3-2x$	$+$		
$\frac{3+2x}{3-2x}$			

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$x = -\frac{3}{2}$ $\qquad$ $x = \frac{3}{2}$

$-\infty$ $\qquad$ $-\frac{3}{2}$ $\qquad$ $\frac{3}{2}$ $\qquad$ $+\infty$

$3+2x$	$-$	$+$	$+$
$3-2x$	$+$	$+$	
$\frac{3+2x}{3-2x}$			

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$$-\infty \qquad -\frac{3}{2} \qquad \frac{3}{2} \qquad +\infty$$

$3+2x$	$-$	$+$	$+$
$3-2x$	$+$	$+$	$-$
$\frac{3+2x}{3-2x}$			

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	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$		$+$	
$3-2x$		$+$		$+$		$-$	
$\frac{3+2x}{3-2x}$		$-$					

$$g(x) = \log_4 \frac{3+2x}{3-2x}$$

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$-\infty$ $\quad -\frac{3}{2}$ $\quad \frac{3}{2}$ $\quad +\infty$

$3+2x$	$-$	$+$	$+$
$3-2x$	$+$	$+$	$-$
$\frac{3+2x}{3-2x}$	$-$	$+$	

$$g(x) = \log_4 \frac{3+2x}{3-2x}$$

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$-\infty \qquad -\frac{3}{2} \qquad \frac{3}{2} \qquad +\infty$

$3+2x$	$-$	$+$	$+$
$3-2x$	$+$	$+$	$-$
$\frac{3+2x}{3-2x}$	$-$	$+$	$-$

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) domena

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	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$		$+$	
$3-2x$		$+$		$+$		$-$	
$\frac{3+2x}{3-2x}$		$-$		$\textcircled{+}$		$-$	

$$D_g = \left\langle -\frac{3}{2},\ \frac{3}{2} \right\rangle$$

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) **domena**

$$\frac{3+2x}{3-2x} > 0$$

$$3+2x=0 \qquad 3-2x=0$$

$$x=-\frac{3}{2} \qquad x=\frac{3}{2}$$

	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$		$+$	
$3-2x$		$+$		$+$		$-$	
$\frac{3+2x}{3-2x}$		$-$		$\textcircled{+}$		$-$	

$$\boxed{D_g = \left\langle -\frac{3}{2},\ \frac{3}{2} \right\rangle}$$

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$$x = -\frac{3}{2} \qquad x = \frac{3}{2}$$

	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$		$+$	
$3-2x$		$+$		$+$		$-$	
$\frac{3+2x}{3-2x}$		$-$		$\textcircled{+}$		$-$	

$$\boxed{D_g = \left\langle -\frac{3}{2}, \frac{3}{2} \right\rangle}$$

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) domena

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$$3 + 2x = 0 \qquad 3 - 2x = 0$$

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	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$		$+$	
$3-2x$		$+$		$+$		$-$	
$\frac{3+2x}{3-2x}$		$-$		⊕		$-$	

$$g(-x) =$$

$$\boxed{D_g = \left\langle -\frac{3}{2},\ \frac{3}{2} \right\rangle}$$

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) domena

$$\frac{3+2x}{3-2x} > 0$$

$3+2x=0$ $3-2x=0$

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

$-\infty$ $-\frac{3}{2}$ $\frac{3}{2}$ $+\infty$

$3+2x$	$-$	$+$	$+$
$3-2x$	$+$	$+$	$-$
$\frac{3+2x}{3-2x}$	$-$	⊕	$-$

$$g(-x) = \log_4 \underline{\hspace{4cm}}$$

$$\boxed{D_g = \left\langle -\frac{3}{2},\ \frac{3}{2} \right\rangle}$$

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) domena

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$$x = -\frac{3}{2} \qquad x = \frac{3}{2}$$

	$-\infty$	$-\frac{3}{2}$	$\frac{3}{2}$	$+\infty$
$3+2x$	$-$	$+$	$+$	
$3-2x$	$+$	$+$	$-$	
$\frac{3+2x}{3-2x}$	$-$	$\oplus$	$-$	

$$g(-x) = \log_4 \frac{3+2\cdot(-x)}{}$$

$$\boxed{D_g = \left\langle -\frac{3}{2}, \frac{3}{2} \right\rangle}$$

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) **domena**

$$\frac{3+2x}{3-2x} > 0$$

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$x=-\frac{3}{2}$ $\qquad$ $x=\frac{3}{2}$

	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$		$+$	
$3-2x$		$+$		$+$		$-$	
$\frac{3+2x}{3-2x}$		$-$		⊕		$-$	

$$g(-x) = \log_4 \frac{3+2\cdot(-x)}{3-2\cdot(-x)}$$

$$\boxed{D_g = \left\langle -\frac{3}{2},\ \frac{3}{2} \right\rangle}$$

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$x = -\frac{3}{2} \qquad x = \frac{3}{2}$

	$-\infty$	$-\frac{3}{2}$	$\frac{3}{2}$	$+\infty$
$3+2x$	$-$	$+$	$+$	
$3-2x$	$+$	$+$	$-$	
$\frac{3+2x}{3-2x}$	$-$	$\oplus$	$-$	

$$g(-x) = \log_4 \frac{3+2\cdot(-x)}{3-2\cdot(-x)} = \log_4 \underline{\qquad\qquad}$$

$$\boxed{D_g = \left\langle -\frac{3}{2}, \frac{3}{2} \right\rangle}$$

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) **domena**

$$\frac{3+2x}{3-2x} > 0$$

$$3 + 2x = 0 \qquad 3 - 2x = 0$$

$$x = -\frac{3}{2} \qquad x = \frac{3}{2}$$

	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$		$+$	
$3-2x$		$+$		$+$		$-$	
$\frac{3+2x}{3-2x}$		$-$		$\oplus$		$-$	

$$g(-x) = \log_4 \frac{3 + 2\cdot(-x)}{3 - 2\cdot(-x)} = \log_4 \frac{3-2x}{}$$

$$\boxed{D_g = \left\langle -\frac{3}{2},\ \frac{3}{2} \right\rangle}$$

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) domena

$$\frac{3+2x}{3-2x} > 0$$

$$3+2x=0 \qquad 3-2x=0$$

$$x = -\frac{3}{2} \qquad x = \frac{3}{2}$$

	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$		$+$	
$3-2x$		$+$		$+$		$-$	
$\frac{3+2x}{3-2x}$		$-$		$\textcircled{+}$		$-$	

$$g(-x) = \log_4 \frac{3+2\cdot(-x)}{3-2\cdot(-x)} = \log_4 \frac{3-2x}{3+2x}$$

$$\boxed{D_g = \left\langle -\frac{3}{2},\ \frac{3}{2} \right\rangle}$$

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) domena

$$\frac{3+2x}{3-2x} > 0$$

$$3+2x=0 \qquad 3-2x=0$$

$$x=-\frac{3}{2} \qquad x=\frac{3}{2}$$

	$-\infty$	$-\frac{3}{2}$	$\frac{3}{2}$	$+\infty$
$3+2x$	$-$	$+$	$+$	
$3-2x$	$+$	$+$	$-$	
$\frac{3+2x}{3-2x}$	$-$	$\oplus$	$-$	

$$g(-x) = \log_4 \frac{3+2\cdot(-x)}{3-2\cdot(-x)} = \log_4 \frac{3-2x}{3+2x} = \log_4$$

$$\boxed{D_g = \left\langle -\frac{3}{2}, \frac{3}{2} \right\rangle}$$

$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

c) domena

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	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$		$+$	
$3-2x$		$+$		$+$		$-$	
$\frac{3+2x}{3-2x}$		$-$		⊕		$-$	

$$g(-x) = \log_4 \frac{3+2\cdot(-x)}{3-2\cdot(-x)} = \log_4 \frac{3-2x}{3+2x} = \log_4 \left(\frac{3+2x}{3-2x}\right)^{-1}$$

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	$-\infty$ $-\frac{3}{2}$	$-\frac{3}{2}$ $\frac{3}{2}$	$\frac{3}{2}$ $+\infty$
$3+2x$	$-$	$+$	$+$
$3-2x$	$+$	$+$	$-$
$\frac{3+2x}{3-2x}$	$-$	$\oplus$	$-$

$$g(-x) = \log_4 \frac{3+2\cdot(-x)}{3-2\cdot(-x)} = \log_4 \frac{3-2x}{3+2x} = \log_4 \left(\frac{3+2x}{3-2x}\right)^{-1} =$$

$$\log_a x^k = k \cdot \log_a x$$

$$D_g = \left\langle -\frac{3}{2},\ \frac{3}{2} \right\rangle$$

$$g(x) = \log_4 \frac{3+2x}{3-2x}$$

c) domena

$$\frac{3+2x}{3-2x} > 0$$

$3 + 2x = 0$ $\qquad$ $3 - 2x = 0$

$x = -\frac{3}{2}$ $\qquad$ $x = \frac{3}{2}$

	$-\infty$ $\quad$ $-\frac{3}{2}$	$-\frac{3}{2}$ $\quad$ $\frac{3}{2}$	$\frac{3}{2}$ $\quad$ $+\infty$
$3+2x$	$-$	$+$	$+$
$3-2x$	$+$	$+$	$-$
$\frac{3+2x}{3-2x}$	$-$	⊕	$-$

$$g(-x) = \log_4 \frac{3+2\cdot(-x)}{3-2\cdot(-x)} = \log_4 \frac{3-2x}{3+2x} = \log_4 \left(\frac{3+2x}{3-2x}\right)^{-1} =$$

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$-\infty \qquad -\frac{3}{2} \qquad \frac{3}{2} \qquad +\infty$

$3+2x$	$-$	$+$	$+$
$3-2x$	$+$	$+$	$-$
$\frac{3+2x}{3-2x}$	$-$	$\textcircled{+}$	$-$

$$g(-x) = \log_4 \frac{3+2\cdot(-x)}{3-2\cdot(-x)} = \log_4 \frac{3-2x}{3+2x} = \log_4 \left(\frac{3+2x}{3-2x}\right)^{-1} =$$

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$$\boxed{D_g = \left\langle -\frac{3}{2}, \frac{3}{2} \right\rangle}$$

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	$-\infty$	$-\frac{3}{2}$	$\frac{3}{2}$	$+\infty$
$3+2x$	$-$	$+$	$+$	
$3-2x$	$+$	$+$	$-$	
$\frac{3+2x}{3-2x}$	$-$	$\oplus$	$-$	

$$g(-x) = \log_4 \frac{3 + 2\cdot(-x)}{3 - 2\cdot(-x)} = \log_4 \frac{3-2x}{3+2x} = \log_4 \left(\frac{3+2x}{3-2x}\right)^{-1} =$$

$$= -\log_4 \frac{3+2x}{3-2x} = -g(x)$$

$$\boxed{\log_a x^k = k \cdot \log_a x}$$

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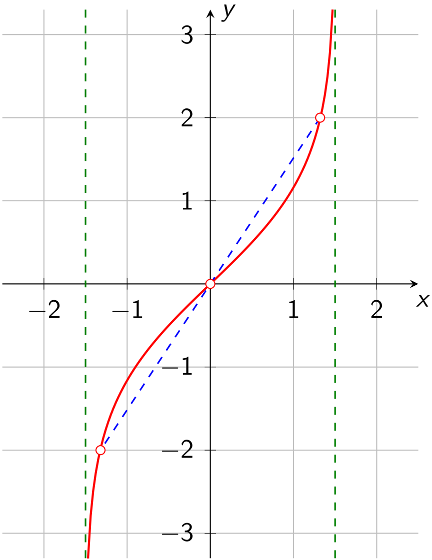
	$-\infty$		$-\frac{3}{2}$		$\frac{3}{2}$		$+\infty$
$3+2x$		$-$		$+$		$+$	
$3-2x$		$+$		$+$		$-$	
$\frac{3+2x}{3-2x}$		$-$		$\oplus$		$-$	

$$g(-x) = \log_4 \frac{3+2\cdot(-x)}{3-2\cdot(-x)} = \log_4 \frac{3-2x}{3+2x} = \log_4 \left(\frac{3+2x}{3-2x}\right)^{-1} =$$

$$= -\log_4 \frac{3+2x}{3-2x} = -g(x)$$

g je neparna funkcija

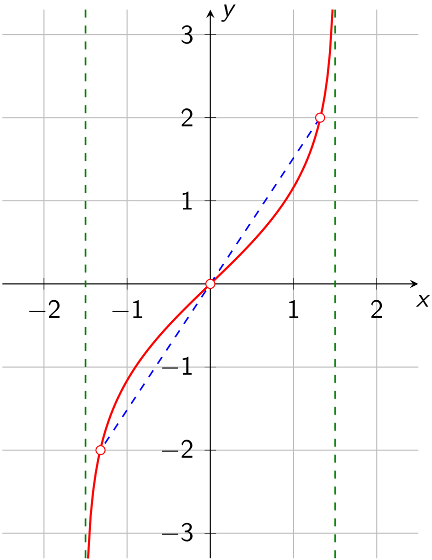
Graf funkcije g



$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

$$\boxed{D_g = \left\langle -\frac{3}{2},\ \frac{3}{2} \right\rangle}$$

Graf funkcije g

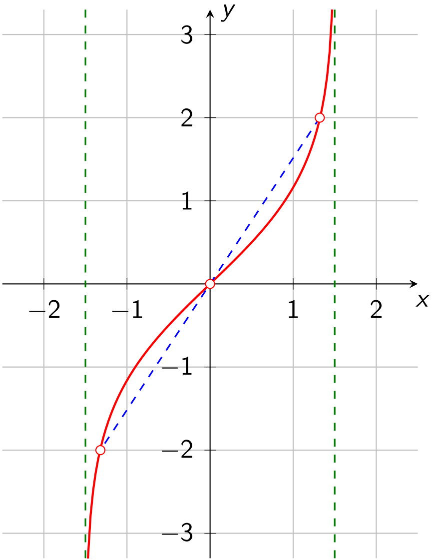


$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

$$\boxed{D_g = \left\langle -\frac{3}{2},\ \frac{3}{2} \right\rangle}$$

$$\lim_{x \to \frac{3}{2}-} g(x) = +\infty$$

Graf funkcije g



$$\boxed{g(x) = \log_4 \frac{3+2x}{3-2x}}$$

$$\boxed{D_g = \left\langle -\frac{3}{2},\ \frac{3}{2} \right\rangle}$$

$$\lim_{x \to \frac{3}{2}-} g(x) = +\infty$$

$$\lim_{x \to -\frac{3}{2}+} g(x) = -\infty$$