

A mallard duck is swimming in a body of water. The water is a deep blue color, and there are many ripples and reflections on the surface, creating a shimmering effect. The duck is in the center of the frame, facing left. Its head is dark, and its body is a mix of brown and white. The background is a bright, sunny sky reflected in the water.

3.7. Ispitivanje toka funkcije 3

20. 11. 2020.

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x + 2}{(x - 1)^4}$.

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x + 2}{(x - 1)^4}$.

Rješenje.

① $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\}$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x + 2}{(x - 1)^4}$.

Rješenje.

① $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x + 2}{(x - 1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x + 2}{(x - 1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x + 2}{(x - 1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 Rastav u parcijalne razlomke:

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x + 2}{(x - 1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 Rastav u parcijalne razlomke:

$$\frac{4x + 2}{(x - 1)^4} = \frac{A}{x - 1} + \frac{B}{(x - 1)^2} + \frac{C}{(x - 1)^3} + \frac{D}{(x - 1)^4}.$$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x + 2}{(x - 1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 Rastav u parcijalne razlomke:

$$\frac{4x + 2}{(x - 1)^4} = \frac{A}{x - 1} + \frac{B}{(x - 1)^2} + \frac{C}{(x - 1)^3} + \frac{D}{(x - 1)^4}.$$

1. način. Pomnožimo ovu jednakost sa $(x - 1)^4$, izjednačimo koeficijente uz pojedine potencije od x na lijevoj i desnoj strani jednadžbe, i riješimo nastali linearni sustav.

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x + 2}{(x - 1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 Rastav u parcijalne razlomke:

$$\frac{4x + 2}{(x - 1)^4} = \frac{A}{x - 1} + \frac{B}{(x - 1)^2} + \frac{C}{(x - 1)^3} + \frac{D}{(x - 1)^4}.$$

1. *način.* Pomnožimo ovu jednakost sa $(x - 1)^4$, izjednačimo koeficijente uz pojedine potencije od x na lijevoj i desnoj strani jednadžbe, i riješimo nastali linearni sustav.

2. *način.* Primijetimo da je

$$\frac{4x + 2}{(x - 1)^4} = \frac{4(x - 1) + 6}{(x - 1)^4}$$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x + 2}{(x - 1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 Rastav u parcijalne razlomke:

$$\frac{4x + 2}{(x - 1)^4} = \frac{A}{x - 1} + \frac{B}{(x - 1)^2} + \frac{C}{(x - 1)^3} + \frac{D}{(x - 1)^4}.$$

1. *način.* Pomnožimo ovu jednakost sa $(x - 1)^4$, izjednačimo koeficijente uz pojedine potencije od x na lijevoj i desnoj strani jednadžbe, i riješimo nastali linearni sustav.

2. *način.* Primijetimo da je

$$\frac{4x + 2}{(x - 1)^4} = \frac{4(x - 1) + 6}{(x - 1)^4} = \frac{4}{(x - 1)^3} + \frac{6}{(x - 1)^4}.$$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 Rastav u parcijalne razlomke:

$$\frac{4x+2}{(x-1)^4} = \frac{A}{x-1} + \frac{B}{(x-1)^2} + \frac{C}{(x-1)^3} + \frac{D}{(x-1)^4}.$$

1. *način.* Pomnožimo ovu jednakost sa $(x-1)^4$, izjednačimo koeficijente uz pojedine potencije od x na lijevoj i desnoj strani jednadžbe, i riješimo nastali linearni sustav.

2. *način.* Primijetimo da je

$$\frac{4x+2}{(x-1)^4} = \frac{4(x-1)+6}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}.$$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5}$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- 5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6}$

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- 5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- f nije ni parna ni neparna ni periodična.
- Nultočke: $-\frac{1}{2}$.
- $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- f nije ni parna ni neparna ni periodična.
- Nultočke: $-\frac{1}{2}$.
- $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4}$

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.

2 f nije ni parna ni neparna ni periodična.

3 Nultočke: $-\frac{1}{2}$.

4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .

5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.

6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{\frac{1}{x^4}}{\frac{1}{x^4}}$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.

2 f nije ni parna ni neparna ni periodična.

3 Nultočke: $-\frac{1}{2}$.

4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .

5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.

6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{\left(1 - \frac{1}{x}\right)^4}$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- 5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- 6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{\left(1 - \frac{1}{x}\right)^4} \rightarrow 0$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- 5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- 6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{\left(1 - \frac{1}{x}\right)^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- 5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- 6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{(1-\frac{1}{x})^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- 5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- 6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{\left(1 - \frac{1}{x}\right)^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right)$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- 5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- 6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{(1-\frac{1}{x})^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- 1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- 2 f nije ni parna ni neparna ni periodična.
- 3 Nultočke: $-\frac{1}{2}$.
- 4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- 5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- 6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{\left(1 - \frac{1}{x}\right)^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$
 \rightsquigarrow V. a.: $x = 1$.

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.

2 f nije ni parna ni neparna ni periodična.

3 Nultočke: $-\frac{1}{2}$.

4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .

5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.

6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{(1-\frac{1}{x})^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.

$x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$

\rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	-1	$-\frac{1}{2}$	1	$+\infty$
f	\times			0	\times	\times
f'	\times		0		\times	\times
f''	\times	0			\times	\times
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	0	$\rightarrow +\infty$	$+\infty \leftarrow \rightarrow 0$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- f nije ni parna ni neparna ni periodična.
- Nultočke: $-\frac{1}{2}$.
- $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{(1-\frac{1}{x})^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$
 \rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	-1	$-\frac{1}{2}$	1	$+\infty$			
f	\times	-	-	-	0	+	\times	+	\times
f'	\times			0			\times		\times
f''	\times	0					\times		\times
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	0	$\rightarrow +\infty$	$+\infty \leftarrow$	$\rightarrow 0$		

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.

2 f nije ni parna ni neparna ni periodična.

3 Nultočke: $-\frac{1}{2}$.

4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .

5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.

6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{\left(1 - \frac{1}{x}\right)^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.

$x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$

\rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	-1	$-\frac{1}{2}$	1	$+\infty$			
f	\times	-	-	0	+	\times	+	\times	
f'	\times	-	-	0	+	+	\times	-	\times
f''	\times	0				\times		\times	
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	0	$\rightarrow +\infty$	$+\infty \leftarrow$	$\rightarrow 0$		

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- f nije ni parna ni neparna ni periodična.
- Nultočke: $-\frac{1}{2}$.
- $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{(1-\frac{1}{x})^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$
 \rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	-1	$-\frac{1}{2}$	1	$+\infty$
f	$\times \searrow -$	$\searrow -$	$\nearrow -$	$0 \nearrow +$	$\times \searrow +$	\times
f'	$\times -$	$-$	$0 +$	$+$	$\times -$	\times
f''	\times	0			\times	\times
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	$0 \rightarrow +\infty$	$+\infty \leftarrow$	$\rightarrow 0$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- f nije ni parna ni neparna ni periodična.
- Nultočke: $-\frac{1}{2}$.
- $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{(1-\frac{1}{x})^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$
 \rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	glob. min -1	$-\frac{1}{2}$	1	$+\infty$
f	$\times \searrow -$	$\searrow -$	$\nearrow -$	$0 \nearrow +$	$\times \searrow +$	\times
f'	$\times -$	$-$	$0 +$	$+$	$\times -$	\times
f''	\times	0			\times	\times
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	0	$\rightarrow +\infty$	$+\infty \leftarrow \rightarrow 0$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.

2 f nije ni parna ni neparna ni periodična.

3 Nultočke: $-\frac{1}{2}$.

4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .

5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.

6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{\left(1 - \frac{1}{x}\right)^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.

$x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$

\rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	glob. min -1	$-\frac{1}{2}$	1	$+\infty$
f	$\times \searrow -$	$\searrow -$	$\nearrow -$	$0 \nearrow +$	$\times \searrow +$	\times
f'	$\times -$	$-$	$0 +$	$+$	$\times -$	\times
f''	$\times -$	$0 +$	$+$	$+$	$\times +$	\times
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	$0 \rightarrow +\infty$	$+\infty \leftarrow$	$\rightarrow 0$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

1 $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.

2 f nije ni parna ni neparna ni periodična.

3 Nultočke: $-\frac{1}{2}$.

4 $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .

5 $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.

6 $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{\left(1 - \frac{1}{x}\right)^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.

$x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$

\rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	glob. min -1	$-\frac{1}{2}$	1	$+\infty$
f	$\times \searrow - \cap$	$\searrow - \cup$	$\nearrow - \cup \cup$	$\nearrow + \cup$	$\times \searrow + \cup$	\times
f'	$\times -$	$-$	0	$+$	$+$	$\times - \times$
f''	$\times -$	0	$+$	$+$	$+$	$\times + \times$
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	0	$\rightarrow +\infty$	$+\infty \leftarrow \rightarrow 0$

Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

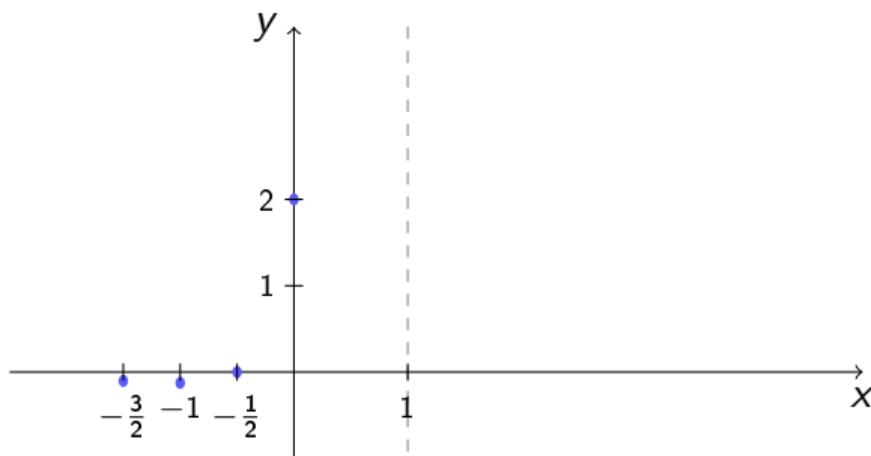
Rješenje.

- $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- f nije ni parna ni neparna ni periodična.
- Nultočke: $-\frac{1}{2}$.
- $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{(1-\frac{1}{x})^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1 \pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$
 \rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	glob. min -1	$-\frac{1}{2}$	1	$+\infty$
f	$\times \searrow - \cap$	$\searrow - U$	$\nearrow - U \cup$	$\nearrow + U \cup$	$\times \searrow + U \times$	
f'	$\times -$	$-$	0	$+$	$+$	$\times - \times$
f''	$\times -$	0	$+$	$+$	$+$	$\times + \times$
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	0	$\rightarrow +\infty$	$+\infty \leftarrow \rightarrow 0$

8



Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

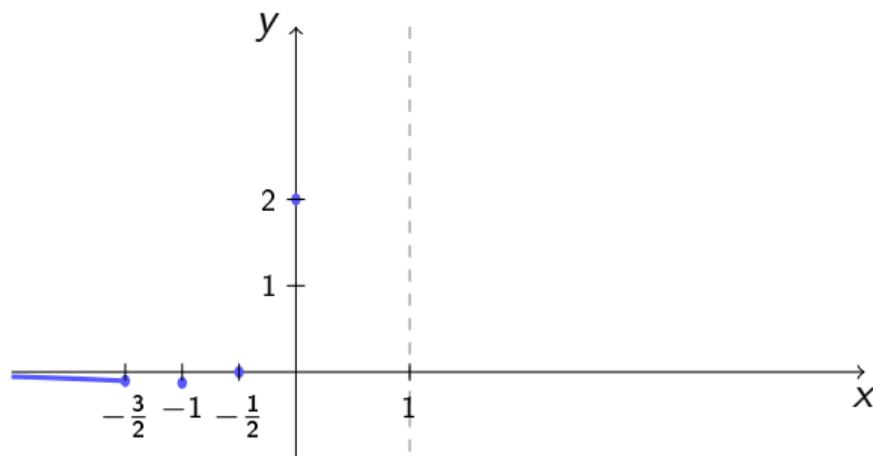
Rješenje.

- $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- f nije ni parna ni neparna ni periodična.
- Nultočke: $-\frac{1}{2}$.
- $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{4}{x^3} + \frac{2}{x^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$
 \rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	glob. min -1	$-\frac{1}{2}$	1	$+\infty$
f	$\times \searrow - \cap$	$\searrow - U$	$\nearrow - U \cup$	$\nearrow + U \cup$	$\times \searrow + U \times$	
f'	$\times -$	$-$	0	$+$	$+$	$\times - \times$
f''	$\times -$	0	$+$	$+$	$+$	$\times + \times$
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	0	$\rightarrow +\infty$	$+\infty \leftarrow \rightarrow 0$

8



Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

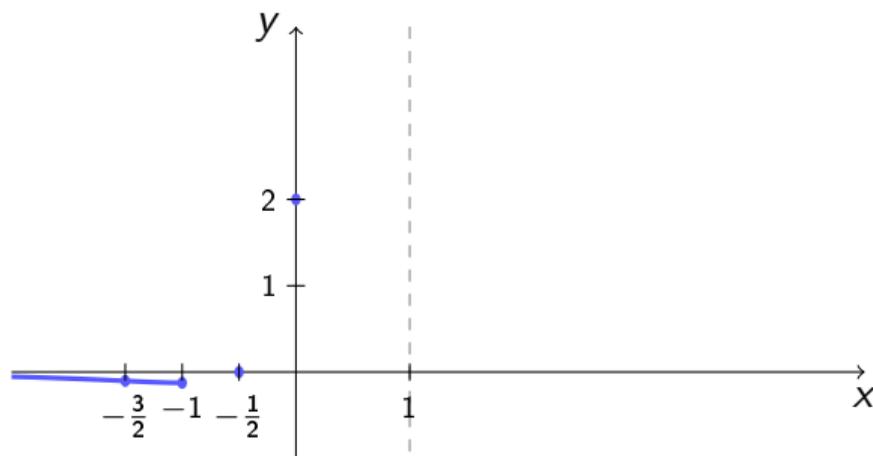
Rješenje.

- $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- f nije ni parna ni neparna ni periodična.
- Nultočke: $-\frac{1}{2}$.
- $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{4}{x^3} + \frac{2}{x^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$
 \rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	glob. min -1	$-\frac{1}{2}$	1	$+\infty$
f	$\times \searrow - \cap$	$\searrow - U$	$\nearrow - U$	$\nearrow + U$	$\times \searrow + U$	\times
f'	$\times -$	$-$	0	$+$	$+$	$\times - \times$
f''	$\times -$	0	$+$	$+$	$+$	$\times + \times$
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	0	$\rightarrow +\infty$	$+\infty \leftarrow \rightarrow 0$

8



Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

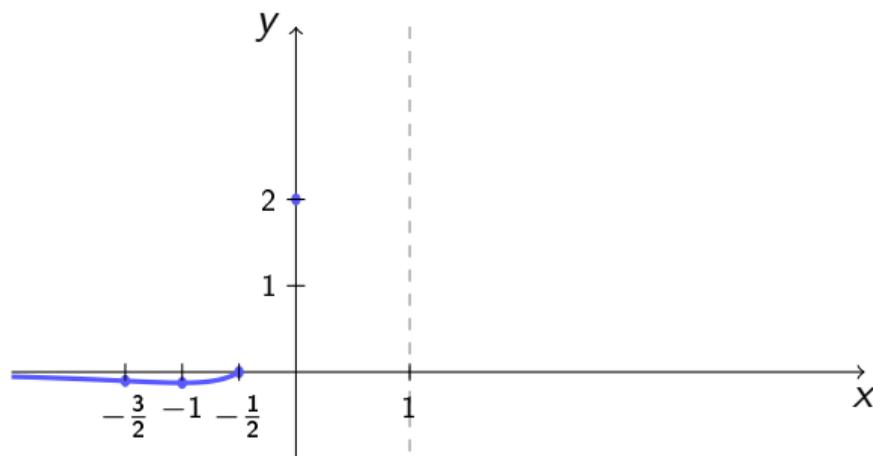
Rješenje.

- $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- f nije ni parna ni neparna ni periodična.
- Nultočke: $-\frac{1}{2}$.
- $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{(1-\frac{1}{x})^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1\pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$
 \rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	glob. min -1	$-\frac{1}{2}$	1	$+\infty$
f	$\times \searrow - \cap$	$\searrow - U$	$\nearrow - U \cup$	$\nearrow + U \cup$	$\times \searrow + U \times$	
f'	$\times -$	$-$	0	$+$	$+$	$\times - \times$
f''	$\times -$	0	$+$	$+$	$+$	$\times + \times$
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	0	$\rightarrow +\infty$	$+\infty \leftarrow \rightarrow 0$

8



Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

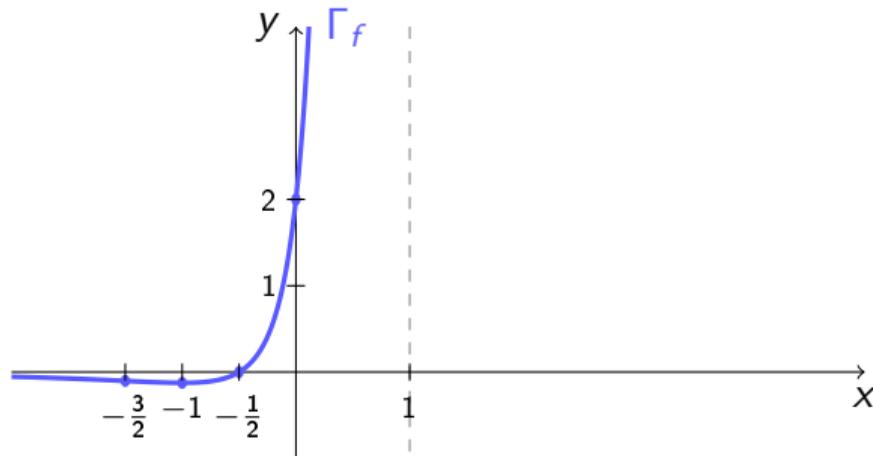
Rješenje.

- $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- f nije ni parna ni neparna ni periodična.
- Nultočke: $-\frac{1}{2}$.
- $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{\frac{4}{x^3} + \frac{2}{x^4}}{(1-\frac{1}{x})^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1 \pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$
 \rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	glob. min -1	$-\frac{1}{2}$	1	$+\infty$
f	$\times \searrow - \cap$	$\searrow - \cup$	$\nearrow - \cup$	$\nearrow + \cup$	$\times \searrow + \cup$	\times
f'	$\times -$	$-$	0	$+$	$+$	$\times -$
f''	$\times -$	0	$+$	$+$	$+$	$\times +$
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	0	$\rightarrow +\infty$	$+\infty \leftarrow \rightarrow 0$

8



Zadatak 34

Ispitajte tok i skicirajte graf funkcije $f(x) := \frac{4x+2}{(x-1)^4} = \frac{4}{(x-1)^3} + \frac{6}{(x-1)^4}$.

Rješenje.

- $D = \mathcal{D}_f = \mathbb{R} \setminus \{1\} \rightsquigarrow$ R. d.: $\pm\infty, 1$.
- f nije ni parna ni neparna ni periodična.
- Nultočke: $-\frac{1}{2}$.
- $f'(x) = -\frac{12}{(x-1)^4} - \frac{24}{(x-1)^5} = -12 \cdot \frac{x+1}{(x-1)^5}$
 \rightsquigarrow Stacionarne točke: -1 .
- $f''(x) = \frac{48}{(x-1)^5} + \frac{120}{(x-1)^6} = 24 \cdot \frac{2x+3}{(x-1)^6}$
 $\rightsquigarrow f''(x) = 0 \Leftrightarrow x = -\frac{3}{2}$.
- $x \rightarrow \pm\infty \Rightarrow \frac{4x+2}{(x-1)^4} \cdot \frac{1}{x^4} = \frac{4}{x^3} + \frac{2}{x^4} \rightarrow 0$
 \rightsquigarrow H. a.: $y = 0$.
 $x \rightarrow 1 \pm \Rightarrow \frac{4x+2}{(x-1)^4} \rightarrow \left(\frac{6}{0+}\right) = +\infty$
 \rightsquigarrow V. a.: $x = 1$.

7

	$-\infty$	$-\frac{3}{2}$	glob. min -1	$-\frac{1}{2}$	1	$+\infty$
f	$\times \searrow - \cap$	$\searrow - \cup$	$\nearrow - \cup$	$\nearrow + \cup$	$\times \searrow + \cup$	\times
f'	$\times -$	$-$	0	$+$	$+$	$\times -$
f''	$\times -$	0	$+$	$+$	$+$	$\times +$
$f(x)$	$0 \leftarrow$	-0.1024	$-\frac{1}{8}$	0	$\rightarrow +\infty$	$+\infty \leftarrow \rightarrow 0$

8

