

ŠTEVILA IN ŠTEVILSKI IZRAZI

$$2.) \frac{2\sqrt{3}(\sqrt{3}+1)}{(\sqrt{3}-1)(\sqrt{3}+1)} - \sqrt{12} - 3 =$$

$$2\sqrt{3} \cdot \sqrt{3} = 2\sqrt{9} = 2 \cdot 3 = 6$$

$$\sqrt{3} \cdot \sqrt{3} = \sqrt{9} = 3$$

$$\sqrt{12} = \sqrt{4 \cdot 3} = 2\sqrt{3}$$

$$= \frac{6 + 2\sqrt{3}}{3 + \sqrt{3} - \sqrt{3} - 1} - 2\sqrt{3} - 3 =$$

$$= \frac{6 + 2\sqrt{3}}{2} - 2\sqrt{3} - 3 = \frac{6}{2} + \frac{2\sqrt{3}}{2} - 2\sqrt{3} - 3 =$$

$$= 3 + \sqrt{3} - 2\sqrt{3} - 3 = -\sqrt{3}$$

$$a^n \cdot a^m = a^{n+m}$$

$$(a^n)^m = a^{n \cdot m}$$

$$3.) -0,5 \cdot (a^{-3}b)^2 \cdot \left(-\frac{3}{4}\right)^{-1} a^6 b^{-1} =$$

$$-0,5 \cdot a^{-6} b^2 \cdot \left(-\frac{4}{3}\right) a^6 b^{-1} =$$

$$-\frac{1}{2} \cdot \left(-\frac{4}{3}\right) a^{-6} \cdot a^6 b^2 \cdot b^{-1} = \frac{2}{3} \cdot 1 \cdot b^1 = \frac{2}{3} b$$

$$4.) \sqrt{1 + \sqrt[3]{27}} - 2 \cdot \sqrt[4]{16} = \sqrt{1+3} - 2 \cdot 2 =$$

$$\sqrt{4} - 4 = 2 - 4 = -2$$

$$5.) \left(\frac{3}{2}\right)^2 - 3^0 \cdot 3^{-1} = \left(\frac{3}{2}\right)^2 - 1 \cdot \left(\frac{1}{3}\right)^1 = \frac{4}{9} - \frac{1}{3} =$$

$$= \frac{4}{9} - \frac{3}{9} = \frac{1}{9}$$

$$7.) 5^0 \cdot \left(\frac{2}{5} + 3^{-1} \cdot \frac{3}{4}\right) : \frac{13}{10} = 1 \cdot \left(\frac{2}{5} + \frac{1}{3} \cdot \frac{3}{4}\right) \cdot \frac{10}{13} =$$

$$\left(\frac{2}{5} + \frac{1}{4}\right) \cdot \frac{10}{13} = \left(\frac{8}{20} + \frac{5}{20}\right) \cdot \frac{10}{13} = \frac{13}{20} \cdot \frac{10}{13} = \frac{1}{2}$$

$$8.) 2^{-2} + 3^0 \cdot \left(\frac{4}{3}\right)^{-1} + 16^{\frac{1}{2}} = \left(\frac{1}{2}\right)^2 + 1 \cdot \frac{3}{4} + \sqrt[2]{16} =$$

$$\frac{1}{4} + \frac{3}{4} + 4 = \frac{4}{4} + 4 = 1 + 4 = \underline{5}$$

$$9.) \left(\frac{4}{9}\right)^{\frac{1}{2}} + \left(\frac{3}{4}\right)^{-1} - 3^0 = \sqrt{\frac{4}{9}} + \frac{4}{3} - 1 =$$

$$= \frac{2}{3} + \frac{4}{3} - 1 = \frac{6}{3} - 1 = 2 - 1 = \underline{1}$$

REŠEVANJE ENAČB

$$1.) X - 2 \cdot \left(\frac{3}{2} - X\right) = 4 \cdot (X - 2)$$

$$X - 3 + 2X = 4X - 8$$

$$X + 2X - 4X = -8 + 3$$

$$-1X = -5 \quad / : (-1)$$

$$\underline{\underline{X = 5}}$$

$$2 \cdot \frac{3}{2} = \frac{2}{1} \cdot \frac{3}{2} = \frac{3}{1} = \underline{3}$$

$$2.) \quad (a+b)^2 = a^2 + 2 \cdot a \cdot b + b^2$$

$$\underline{(3x+1)^2} - 4x(2x-3) - x^2 = 0$$

$$\underline{9x^2} + 6x + 1 - \underline{8x^2} + 12x - \underline{x^2} = 0$$

$$6x + 12x = -1$$

$$18x = -1 \quad / : 18$$

$$\underline{\underline{X = -\frac{1}{18}}}$$

KVADRATNA in LINEARNA F.

2.) $f(x) = -x^2 - x + 6$ in $g(x) = x + 3$

a) Nariši oba grafa

b) Izračunaj presečišča.

a) $f(x) = -x^2 - x + 6$

1. NIČLE $y=0$

$$-x^2 - x + 6 = 0$$

$$a = -1 \quad b = -1 \quad c = 6$$

$$D = b^2 - 4ac$$

$$D = (-1)^2 - 4 \cdot (-1) \cdot 6$$

$$D = 1 + 24 = \underline{\underline{25}}$$

$$x_1 = \frac{-b + \sqrt{D}}{2a}$$

$$x_2 = \frac{-b - \sqrt{D}}{2a}$$

$$x_1 = \frac{-(-1) + \sqrt{25}}{2 \cdot (-1)}$$

$$x_2 = \frac{-(-1) - \sqrt{25}}{2 \cdot (-1)}$$

$$x_1 = \frac{1 + 5}{-2}$$

$$x_2 = \frac{1 - 5}{-2}$$

$$x_1 = \frac{6}{-2} = \underline{\underline{-3}} \quad x_2 = \frac{-4}{-2} = \underline{\underline{2}}$$

2. ZAČ. VREDNOST

$$f(0) = -0^2 - 0 + 6 = 6$$

$$Z(0, 6)$$

3. TEME $T(p, q)$

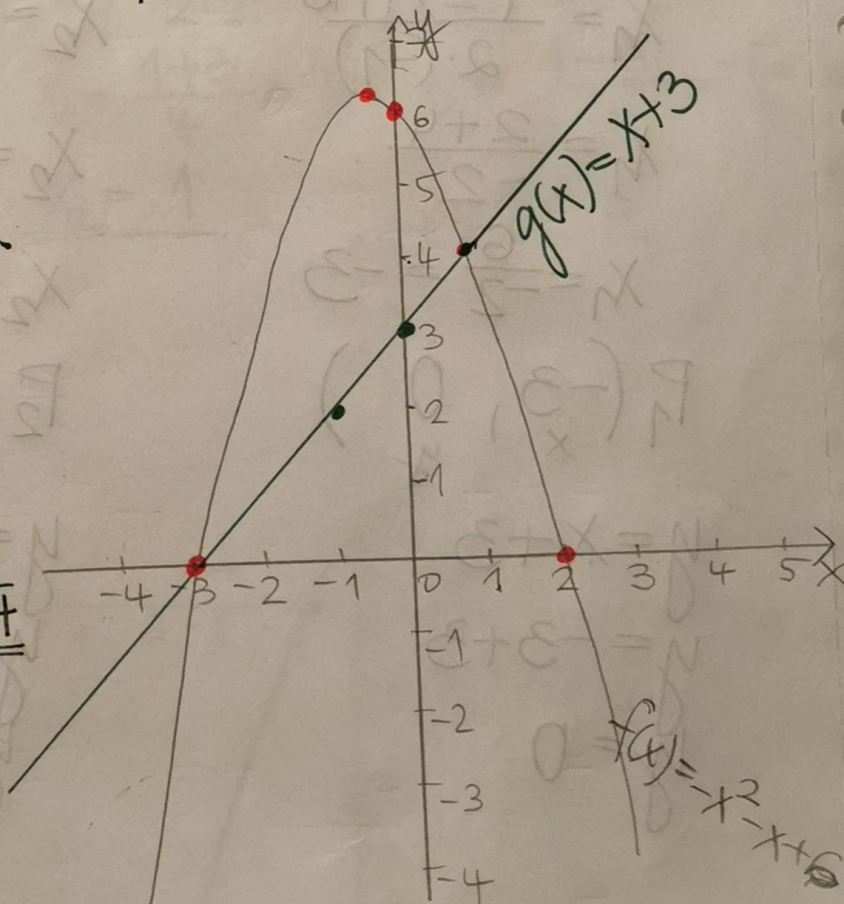
$$p = -\frac{b}{2a} = -\frac{(-1)}{2 \cdot (-1)} = \underline{\underline{-\frac{1}{2}}}$$

$$q = -\frac{D}{4a} = -\frac{25}{4 \cdot (-1)} = \underline{\underline{6\frac{1}{4}}}$$

$$T\left(-\frac{1}{2}, 6\frac{1}{4}\right)$$

$$g(x) = x + 3$$

x	y
-1	2
0	3
1	4



b) PRESEČIŠČE $f(x) = -x^2 - x + 6$ $g(x) = x + 3$

$$y = y$$

$$-x^2 - x + 6 = x + 3$$

$$-x^2 - x + 6 - x - 3 = 0$$

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

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

$$D = b^2 - 4ac$$

$$D = (-2)^2 - 4 \cdot (-1) \cdot 3$$

$$D = 4 + 12 = \underline{16}$$

$$x_1 = \frac{-b + \sqrt{D}}{2a}$$

$$x_2 = \frac{-b - \sqrt{D}}{2a}$$

$$x_1 = \frac{-(-2) + \sqrt{16}}{2 \cdot (-1)}$$

$$x_2 = \frac{-(-2) - \sqrt{16}}{2 \cdot (-1)}$$

$$x_1 = \frac{2 + 4}{-2}$$

$$x_2 = \frac{2 - 4}{-2}$$

$$x_1 = \frac{6}{-2} = -3$$

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

$$P_1 \left(\begin{matrix} x \\ y \end{matrix} \right) = (-3, 0)$$

$$P_2 \left(\begin{matrix} x \\ y \end{matrix} \right) = (1, 4)$$

$$y = x + 3$$

$$y = x + 3$$

$$y = -3 + 3$$

$$y = 1 + 3$$

$$y = 0$$

$$y = 4$$

GRAF POLINOMA

1.) $p(x) = 2x^3 - 3x^2 + 1$

a) Naniši graf

b) $p(-1) + p(\frac{1}{2})$

a) GRAF
NICLE

$$2x^3 - 3x^2 + 1 = 0$$

	x^3	x^2	x	$\overline{1}$
1	2	-3	0	1
	↓	2	-1	-1
	2	-1	-1	0

Možnosti: +1, -1

$X_1 = 1$

$$2x^2 - 1x - 1 = 0$$

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

$$D = b^2 - 4ac$$

$$D = (-1)^2 - 4 \cdot 2 \cdot (-1)$$

$$D = 1 + 8 = 9$$

$X_1 = 1$ (II. st)

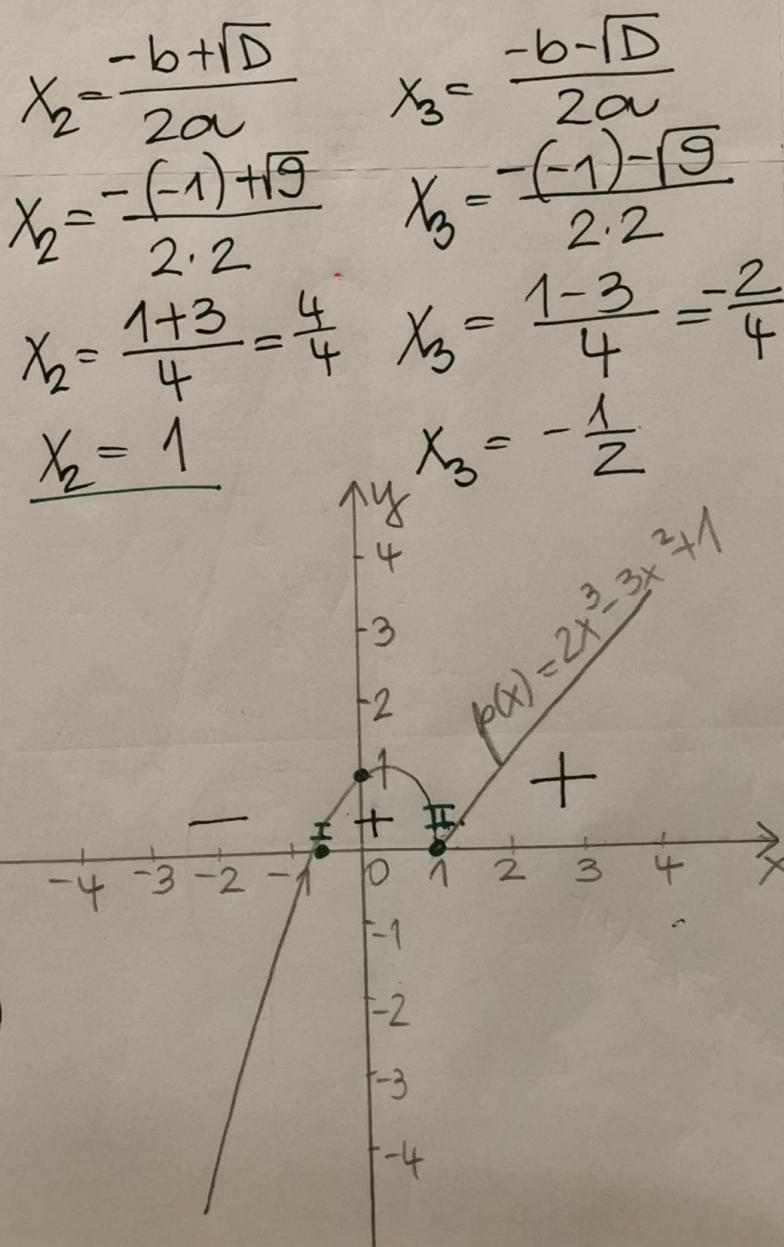
$X_3 = -\frac{1}{2}$ (I. st)

ZÁČ. VŘED.

$$p(0) = 2 \cdot 0^3 - 3 \cdot 0^2 + 1 = \underline{\underline{1}}$$

PŘEDZNAK

$$p(10) = 2 \cdot 10^3 - 3 \cdot 10^2 + 1 = (+)$$



$$p(x) = 2x^3 - 3x^2 + 1$$

$$p(-1) + p\left(\frac{1}{2}\right) = -4 + \frac{1}{2} = \underline{\underline{-3\frac{1}{2}}}$$

$$\begin{aligned} p(-1) &= 2 \cdot (-1)^3 - 3 \cdot (-1)^2 + 1 = 2 \cdot (-1) - 3 \cdot 1 + 1 = \\ &= -2 - 3 + 1 = \underline{\underline{-4}} \end{aligned}$$

$$\begin{aligned} p\left(\frac{1}{2}\right) &= 2 \cdot \left(\frac{1}{2}\right)^3 - 3 \cdot \left(\frac{1}{2}\right)^2 + 1 = \frac{2}{1} \cdot \frac{1}{8} - \frac{3}{1} \cdot \frac{1}{4} + 1 = \\ &= \underline{\frac{1}{4} - \frac{3}{4}} + 1 = -\frac{2}{4} + 1 = -\frac{1}{2} + 1 = \underline{\underline{\frac{1}{2}}} \end{aligned}$$

GRAF RACIONALNE

1. $f(x) = \frac{x-3}{x+1}$

1. NIČLE

$$x-3=0$$
$$x=3 \text{ (I.š.)}$$

2. POLI

$$x+1=0$$
$$x=-1 \text{ (I.š.)}$$

3. ZACH. VREDNOST

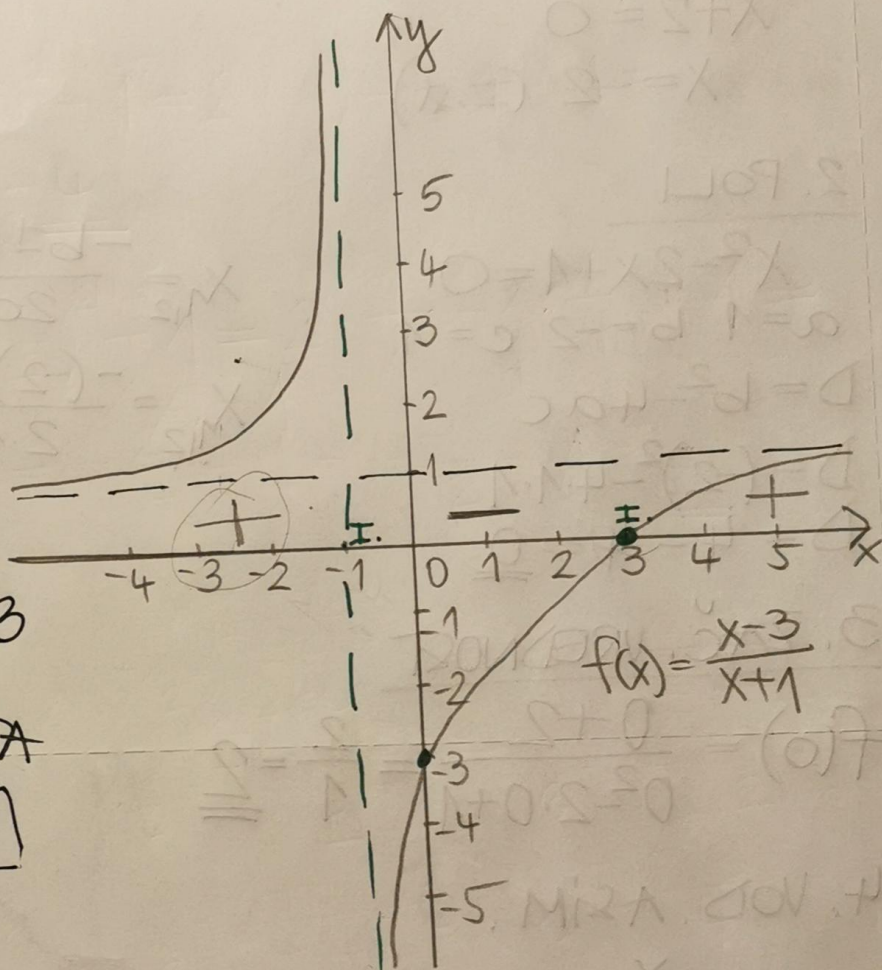
$$f(0) = \frac{0-3}{0+1} = -\frac{3}{1} = -3$$

4. VODORAVNA ASIMPTOTA

$$y = \frac{x}{x} = 1 \quad |y=1|$$

5. PREDZNAK

$$f(10) = \frac{10-3}{10+1} = (+)$$



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

1. NULÉ

$$x+2=0$$

$$x=-2 \text{ (i.s.t.)}$$

2. POLI

$$x^2-2x+1=0$$

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

$$D=b^2-4ac$$

$$D=(-2)^2-4 \cdot 1 \cdot 1$$

$$D=4-4=\underline{\underline{0}}$$

$$x_{1,2} = \frac{-b \pm \sqrt{D}}{2a}$$

$$x_{1,2} = \frac{-(-2) \pm \sqrt{0}}{2 \cdot 1} = \frac{2}{2} = 1 \text{ (i.s.t.)}$$

3. ZAČ. VREDNOST

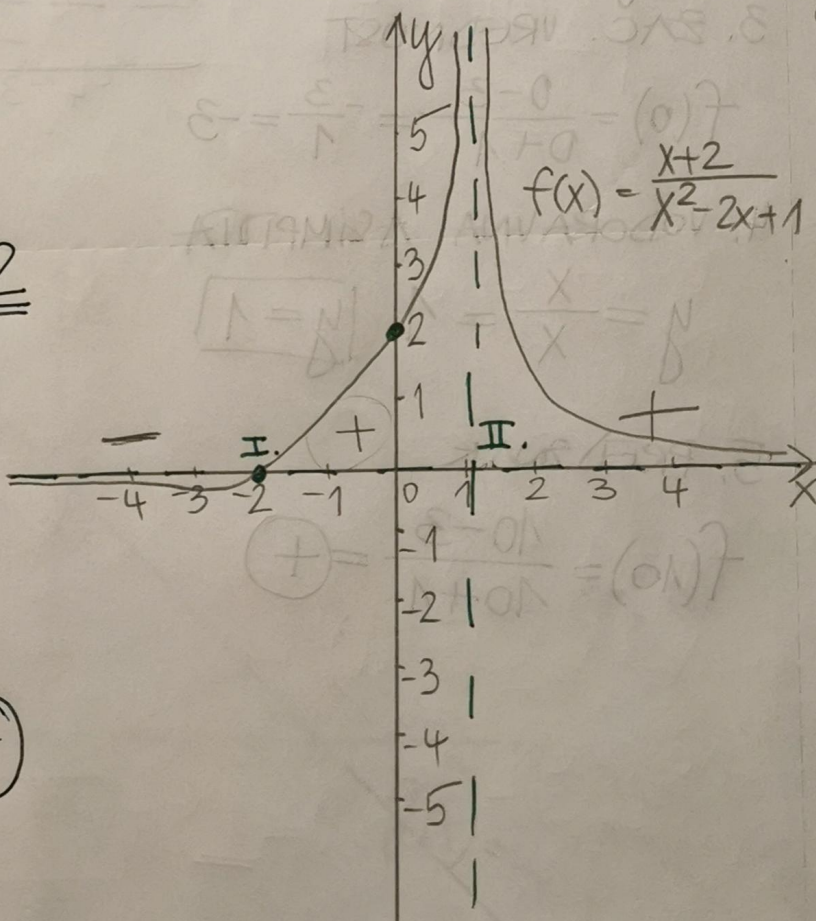
$$f(0) = \frac{0+2}{0^2-2 \cdot 0+1} = \frac{2}{1} = \underline{\underline{2}}$$

4. VOD. ASIM.

$$y = \frac{x}{x^2} \Rightarrow \underline{\underline{y=0}}$$

5. PREDZNAK

$$f(10) = \frac{10+2}{10^2-2 \cdot 10+1} = (+)$$



LOGARITEMSKA FUNKCIJA

1.) $f(x) = \log_3 x$ in $g(x) = -x + 4$

$$f(x) = \log_3 x$$

$$g(x) = -x + 4$$

X	$y = 3^x$
-2	$3^{-2} = \frac{1}{9}$
-1	$3^{-1} = \frac{1}{3}$
0	$3^0 = 1$
1	$3^1 = 3$
2	$3^2 = 9$

X	$y = \log_3 x$
$\frac{1}{9}$	-2
$\frac{1}{3}$	-1
1	0
3	1
9	2

X	y
-1	5
0	4
1	3

