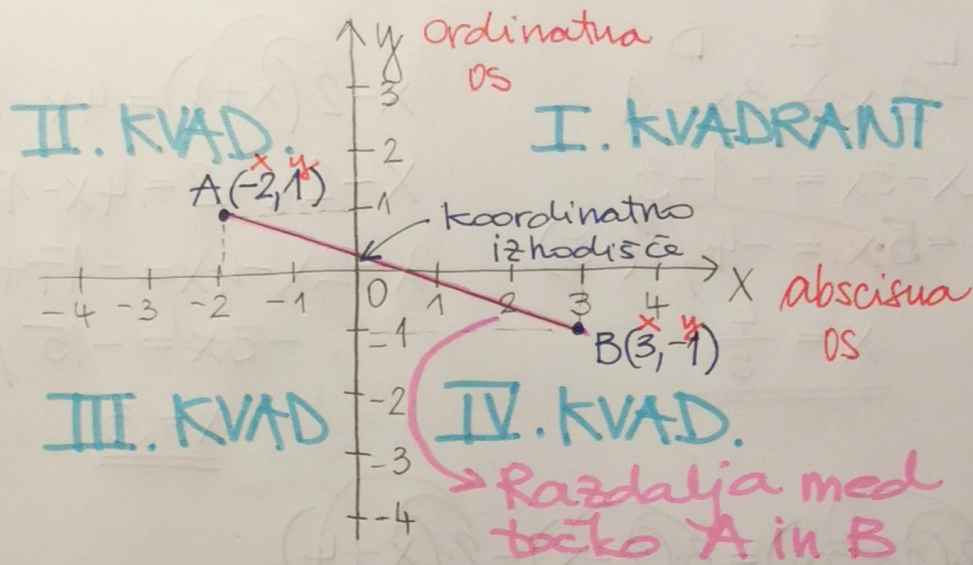


PRAVOKOTNI KOORDINATNI SISTEM



Razdalja med dvema točkama

$$d(A, B) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Izračunaj razdaljo med točko A(-2, 1) in točko B(3, -1)

$$\begin{matrix} x_1 & y_1 \\ A(-2, 1) \\ x_2 & y_2 \\ B(3, -1) \end{matrix}$$

$$\begin{aligned} d(A, B) &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \\ &= \sqrt{(3 - (-2))^2 + (-1 - 1)^2} = \\ &= \sqrt{5^2 + (-2)^2} = \\ &= \sqrt{25 + 4} = \underline{\underline{\sqrt{29}}} \end{aligned}$$

$$\begin{matrix} x_1 & y_1 \\ C(-4, 3) \\ x_2 & y_2 \\ D(2, -1) \end{matrix}$$

$$\begin{aligned} d(C, D) &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \\ &= \sqrt{(2 + 4)^2 + (-1 - 3)^2} = \\ &= \sqrt{6^2 + (-4)^2} = \\ &= \sqrt{36 + 16} = \\ &= \sqrt{52} = \sqrt{4 \cdot 13} = \underline{\underline{2\sqrt{13}}} \end{aligned}$$

4, 9, 16, 25, 36, ...

LINEARNA ENAČBA

$$\begin{aligned}L &= D \\ 3 - 2x &= 3x - 1 \\ -2x - 3x &= -1 - 3 \\ -5x &= -4 \quad / : (-5) \\ x &= \frac{4}{5}\end{aligned}$$

$$\begin{aligned}x - 2 \cdot (x + 1) &= 4x - 17 \\ x - 2x - 2 &= 4x - 17 \\ x - 2x - 4x &= -17 + 2 \\ -5x &= -15 \quad / : (-5) \\ x &= 3\end{aligned}$$

$$\begin{aligned}5x - 2 \cdot (1 + 5x) &= 3 \cdot (2 - x) - 2 \cdot (x + 4) \\ 5x - 2 - 10x &= 6 - 3x - 2x - 8 \\ 5x - 10x + 3x + 2x &= 6 - 8 + 2 \\ 0 &= 0 \quad x \in \mathbb{R}\end{aligned}$$

$$\begin{aligned}2 \cdot (2x + 4) - 3 \cdot (4x + 5) &= 4 \cdot (3 - 2x) + 1 \\ 4x + 8 - 12x - 15 &= 12 - 8x + 1 \\ 4x - 12x + 8x &= 12 + 1 - 8 + 15 \\ 0 &= 20 \quad \text{NI REŠITVE}\end{aligned}$$

$$\begin{aligned}x \cdot (x - 1) &= x^2 - 2 \\ x^2 - x &= x^2 - 2 \\ \cancel{x^2} - x - \cancel{x^2} &= -2 \\ -x &= -2 \quad / : (-1) \\ x &= 2\end{aligned}$$

$$\begin{aligned}(x + 2) \cdot (x + 3) &= (x - 4) \cdot x \\ x^2 + 3x + 2x + 6 &= x^2 - 4x \\ \cancel{x^2} + 3x + 2x - \cancel{x^2} + 4x &= -6 \\ 9x &= -6 \quad / : 9 \\ x &= -\frac{6}{9} \\ x &= -\frac{2}{3}\end{aligned}$$

$$(x+2)^2 = (x-3)(x+3) \quad (a+b)^2 = a^2 + 2 \cdot a \cdot b + b^2$$

$$x^2 + 2 \cdot x \cdot 2 + 2^2 = x^2 + 3x - 3x - 9$$

$$x^2 + 4x + 4 = x^2 - 9$$

$$x^2 + 4x - x^2 = -9 - 4$$

$$4x = -13 \quad |:4$$

$$x = -\frac{13}{4} = -3\frac{1}{4}$$

$$3 \cdot 1 - \frac{3 \cdot (x-1)}{3} = \frac{3 \cdot (3x-4)}{3} \quad | \cdot 3$$

$$3 - (x-1) = (3x-4)$$

$$3 - x + 1 = 3x - 4$$

$$-x - 3x = -4 - 3 - 1$$

$$-4x = -8 \quad | :(-4)$$

$$\underline{\underline{x=2}}$$

$$\frac{3 \cdot (x+4)}{2} + \frac{2 \cdot 1}{3} = \frac{6 \cdot (2-x)}{6} \quad | \cdot 6$$

$$3 \cdot (x+4) + 2 \cdot 1 = (2-x)$$

$$3x + 12 + 2 = 2 - x$$

$$3x + x = 2 - 12 - 2$$

$$4x = -12 \quad |:4$$

$$\underline{\underline{x=-3}}$$

$$\frac{12 \cdot (1+3x)}{4} - \frac{4 \cdot (x+1)}{3} = \frac{6 \cdot (2x+1)}{2} \quad | \cdot 12$$

$$3 \cdot (1+3x) - 4 \cdot (x+1) = 6 \cdot (2x+1)$$

$$3 + 9x - 4x - 4 = 12x + 6$$

$$9x - 4x - 12x = 6 - 3 + 4$$

$$-7x = 7 \quad | :(-7)$$

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

KVADRATNA ENAČBA

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

$$x^2 - 7x = 0$$

$$x(x-7) = 0$$

$x_1 = 0$ $x_2 = 7$

$$x^2 = 3x$$

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

$$x(x-3) = 0$$

$x_1 = 0$ $x_2 = 3$

$$x^2 - 9 = 0$$

$$(x-3)(x+3) = 0$$

$$x_1 = 3 \quad x_2 = -3$$

$$x^2 - 9 = 0$$

$$a=1 \quad b=0 \quad c=-9$$

DISKRIMINANTA

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

$$D = 0^2 - 4 \cdot 1 \cdot (-9)$$

$$D = 36$$

$$a^2 - b^2 = (a-b)(a+b)$$

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

$$x_1 = \frac{-0 + \sqrt{36}}{2 \cdot 1}$$

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

$$x_1 = 3$$

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

$$x_2 = \frac{-0 - \sqrt{36}}{2 \cdot 1}$$

$$x_2 = \frac{-6}{2}$$

$$x_2 = -3$$

$$x^2 - 7x - 8 = 0$$

$$a=1 \quad b=-7 \quad c=-8$$

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

$$D = (-7)^2 - 4 \cdot 1 \cdot (-8)$$

$$D = 49 + 32$$

$$D = 81$$

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

$$x_1 = \frac{-(-7) + \sqrt{81}}{2 \cdot 1}$$

$$x_1 = \frac{7+9}{2}$$

$$x_1 = \frac{16}{2} = 8$$

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

$$x_2 = \frac{7 - \sqrt{81}}{2}$$

$$x_2 = \frac{7-9}{2}$$

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

$$(4x-11) \cdot (x-2) = (x-2) \cdot (x-4) + 4$$

$$4x^2 - 8x - 11x + 22 = x^2 - 4x - 2x + 8 + 4$$

$$\underline{4x^2 - 8x - 11x + 22 - x^2 + 4x + 2x - 8 - 4 = 0}$$

$$3x^2 - 13x + 10 = 0$$

$$a=3 \quad b=-13 \quad c=10$$

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

$$D = (-13)^2 - 4 \cdot 3 \cdot 10$$

$$D = 169 - 120$$

$$D = 49$$

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

$$x_1 = \frac{13 + \sqrt{49}}{2 \cdot 3}$$

$$x_1 = \frac{13 + 7}{6}$$

$$x_1 = \frac{20}{6} = \frac{10}{3}$$

$$x_1 = \underline{\underline{3\frac{1}{3}}}$$

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

$$x_2 = \frac{13 - \sqrt{49}}{2 \cdot 3}$$

$$x_2 = \frac{13 - 7}{6}$$

$$x_2 = \frac{6}{6}$$

$$x_2 = \underline{\underline{1}}$$

LINEARNA FUNKCIJA

$$f(x) = k \cdot x + n \rightarrow \text{začetna vrednost} \Rightarrow \text{pove nam kje funkcija reka y-os}$$

$\hookrightarrow$ smerni koeficient

$k > 0 \Rightarrow$ narašča

$k < 0 \Rightarrow$ pada

1. Nariši graf linearne funkcije $f(x) = 2x + 1$. Izračunaj ničlo funkcije ter začetno vrednost. Napiši ali funkcija narašča ali pada.

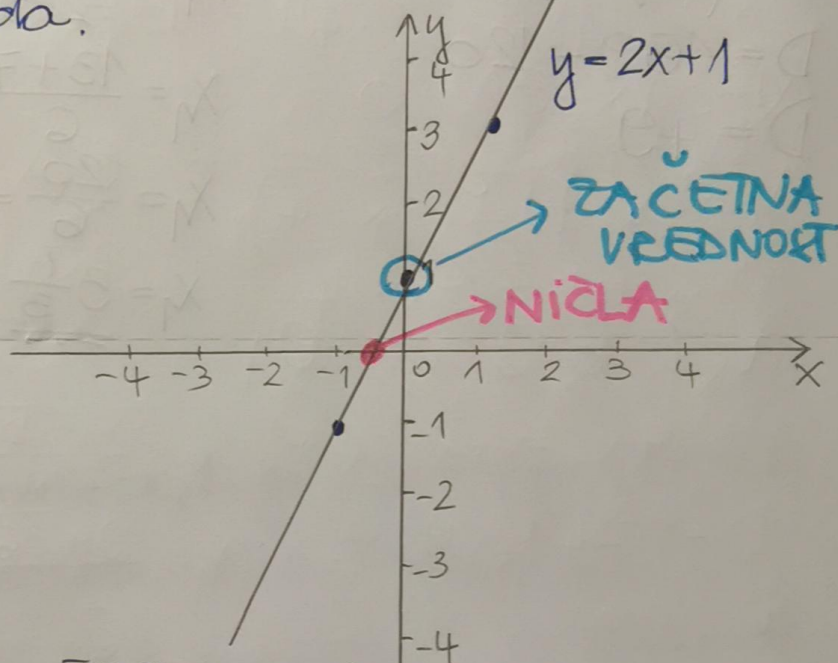
$$f(x) = 2x + 1$$

x	y = 2x + 1	
-1	-1	$T_1(-1, -1)$
0	1	$T_2(0, 1)$
1	3	$T_3(1, 3)$

$$y = 2 \cdot (-1) + 1 = -2 + 1 = -1$$

$$y = 2 \cdot 0 + 1 = 0 + 1 = 1$$

$$y = 2 \cdot 1 + 1 = 2 + 1 = 3$$



NIČLE FUNKCIJE — presečišče z x-osjo
Funkcijo izenačimo z 0.

$$2x + 1 = 0$$

$$2x = -1 \quad | :2$$

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

ZAČETNA VREDNOST — presečišče z y-osjo
V funkcijo namesto x vstaviš 0.

$$f(x) = 2x + 1$$

$$f(0) = 2 \cdot 0 + 1$$

$$f(0) = \underline{\underline{1}} \quad Z(0, 1)$$

Funkcija pada
ali narašča

$$f(x) = \underline{2}x + 1$$

$$k = 2$$

Fun. narašča, ker je
 $k > 0$

Izračunaj ničlo, zač. vrednost ter nariši graf funkcije $f(x) = -x + 3$.

$$f(x) = -x + 3$$

x	y = -x + 3	
-1	4	$T_1(-1, 4)$
0	3	$T_2(0, 3)$
1	2	$T_3(1, 2)$

$$y = -(-1) + 3 = 1 + 3 = 4$$

$$y = -0 + 3 = 3$$

$$y = -1 + 3 = 2$$

Ničla

$$-x + 3 = 0$$

$$-x = -3 \quad | :(-1)$$

$$\underline{\underline{x = 3}}$$

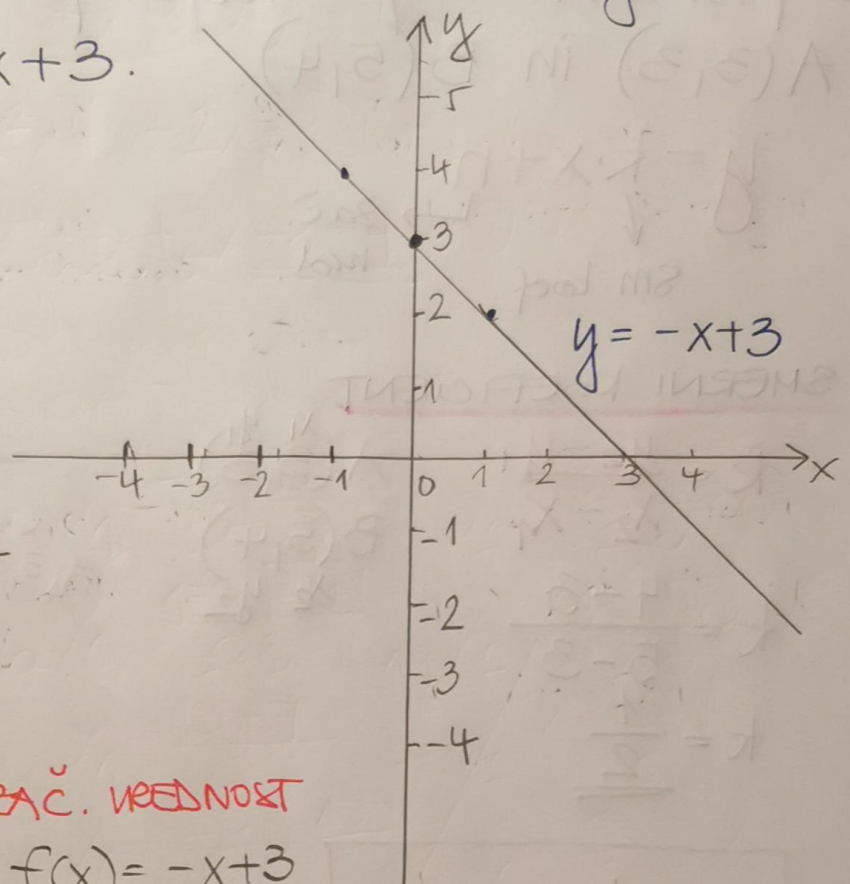
Zač. vrednost

$$f(x) = -x + 3$$

$$f(0) = -0 + 3$$

$$f(0) = \underline{\underline{3}}$$

$$Z(0, 3)$$



Dani sta funkciji $f(x) = 2x + 3$ in $g(x) = -3x + 3$. Nariši ju v isti koordinatni sistem in določi njuno presenišče.

$$f(x) = 2x + 3$$

x	y = 2x + 3	
-1	1	$T_1(-1, 1)$
0	3	$T_2(0, 3)$
1	5	$T_3(1, 5)$

$$y = 2 \cdot (-1) + 3 = -2 + 3 = 1$$

$$y = 2 \cdot 0 + 3 = 3$$

$$y = 2 \cdot 1 + 3 = 2 + 3 = 5$$

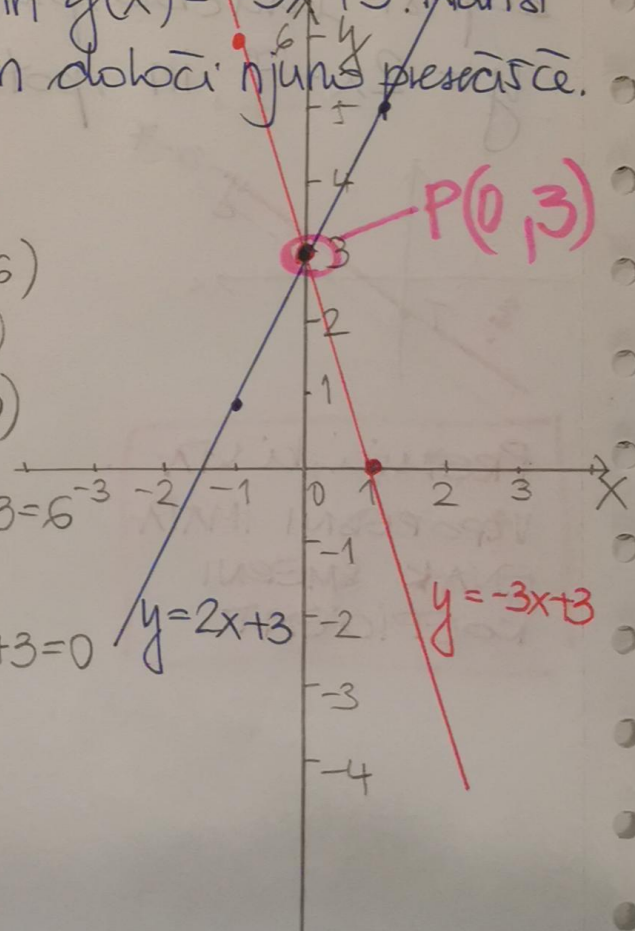
$$g(x) = -3x + 3$$

x	y = -3x + 3	
-1	6	$T_1(-1, 6)$
0	3	$T_2(0, 3)$
1	0	$T_3(1, 0)$

$$y = -3 \cdot (-1) + 3 = 3 + 3 = 6$$

$$y = -3 \cdot 0 + 3 = 3$$

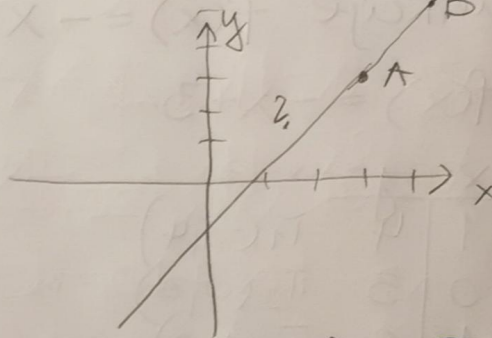
$$y = -3 \cdot 1 + 3 = -3 + 3 = 0$$



Zapiši enačbo premice, ki poteka skozi točki
 $A(3,3)$ in $B(5,4)$.

$$y = k \cdot x + n$$

$\downarrow$ sm. koef. $\rightarrow$ zač. vred.



SMERNI KOEFICIENT

$$k = \frac{y_2 - y_1}{x_2 - x_1}$$

$A(x_1, y_1)$
 $B(x_2, y_2)$

$$k = \frac{4 - 3}{5 - 3}$$

$$k = \frac{1}{2}$$

ZAČETNA VREDNOST

$$y = k \cdot x + n$$

$$3 = \frac{1}{2} \cdot 3 + n$$

$$3 = \frac{3}{2} + n$$

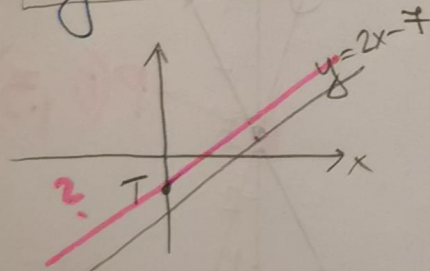
$$3 - \frac{3}{2} = n$$

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

$$1\frac{1}{2} = n$$

$$y = \frac{1}{2}x + 1\frac{1}{2}$$

Zapiši enačbo premice, ki je vzporedna premici
 $y = 2x - 7$, in poteka skozi točko $T(0, -5)$.



$$y = k \cdot x + n$$

$$y = 2x - 7$$

$$k = 2$$

$$k = 2$$

SMERNI KOEF.

ZAČ. VRED.

$$y = k \cdot x + n$$

$T(0, -5)$

$$-5 = 2 \cdot 0 + n$$

$$-5 = n$$

PREMICE, KI STA
 VZPOREDNI IMATA
 ENAK SMERNI
 KOEFICIENT

$$y = 2x - 5$$