ENAČBE PREMICE

Ločimo tri oblike enačbe premice:

- ***EKSPLICITNA*** ⟶ $y = k \cdot x + n$
- ***IMPLICITNA*** ⟶ $ax + by - c = 0$
- ***ODSEKOVNA*** ⟶ $\frac{x}{m} + \frac{y}{n} = 1, \ m, n \neq 0$

1. Enačbo dane premice zapiši v implicitni obliki.

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

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

$y = -\frac{2}{3}x + 2 \ /\cdot 3$

$3y = -2x + 6$

$2x + 3y - 6 = 0$

2. Enačbo dane premice zapiši v odsekovni obliki

$f(x) = 5x - 2$

$y = 5x - 2$

$y - 5x = -2 \ /:(-2)$

$-\frac{y}{2} + \frac{5x}{2} = 1$

$\frac{5x}{2} - \frac{y}{2} = 1$

$\frac{\frac{x}{2}}{5} - \frac{y}{2} = 1$

3. Skozi dani točki položi premico in zapiši njeno enačbo v vseh treh oblikah.

A (-1, 2) in B (2, 4)

$$k = \frac{f(x_2)-f(x_1)}{x_2-x_1}$$

$$k = \frac{4-2}{2-(-1)}$$

$$k = \frac{2}{3}$$

$$f(x) = k \cdot x + n$$

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

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

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

$$n = \frac{6}{3} + \frac{2}{3}$$

$$n = \frac{8}{3} = 2\frac{2}{3}$$

$$y = \frac{2}{3} \cdot x + 2\frac{2}{3}$$ → **eksplicitna oblika**

$$y = \frac{2}{3} \cdot x + 2\frac{2}{3} \quad / \cdot 3$$

$$3y = 2x + 8$$

$$2x - 3y + 8 = 0$$ → **implicitna oblika**

$$2x - 3y + 8 = 0$$

$$2x - 3y = -8 \quad /:(-8)$$

$$-\frac{2x}{8} + \frac{3y}{8} = 1$$

$$-\frac{x}{4}+\frac{y}{\frac{8}{3}}=1$$ → odsekovna oblika

Premici z enačbama $y = k_1 \cdot x + n$ in $y = k_2 x + n$ sta:

- ***vzporedni*** **natanko takrat, ko imata enaka smerna koeficienta $k_1 = k_2$,**
- ***pravokotni*** **natanko takrat, ko za njuna smerna koeficienta velja $k_1 \cdot k_2 = -1$**

4. Zapiši enačbo premice, ki poteka skozi točko A $(\frac{2}{3}, 2)$ in je vzporedna premici $y = -3x + 2$.

$y = -3x + 2$

↓

k = - 3

$k_1 = k_2$

$y = k \cdot x + n$ in A $(\frac{2}{3}, 2)$

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

$n = 2 + 2$

$n = 4$

$y = k \cdot x + n$

$y = -3 \cdot x + 4$

Enačbi $y = -3x + 2$ in $y = -3 \cdot x + 4$ sta vzporedni, ker imata enak smerni koeficient.

5. Določi a tako, da bosta premici $y = 2 - 5x$ in $ax + (a-2)y + 1 = 0$.

$y = 2 - 5x$

$y = -5 \cdot x + 2$

↓

k_1

$ax + (a-2)y + 1 = 0$

$(a-2)y = -ax - 1$

$y = -\frac{a}{(a-2)}x - \frac{1}{(a-2)}$

↓

k_2

Da bosta premici vzporedni morata imeti enaka smerna koeficienta

$$k_1 = k_2$$

$$-5 = -\frac{a}{(a-2)}$$

$$\frac{a}{(a-2)} = 5 \ / \cdot (a-2)$$

$$a = 5 \cdot (a-2)$$

$$a = 5a - 10$$

$$a - 5a = -10$$

$$-4a = -10$$

$$a = \frac{10}{4} = \frac{5}{2} = 2\frac{1}{2}$$

5. Zapiši enačbo pravokotnice na premico $y = 2x - 3$, ki poteka skozi točko A (-2, 3).

$$y = 2x - 3$$

$$\boxed{k_1 = 2}$$

$$k_1 \cdot k_2 = -1$$

$$2 \cdot k_2 = -1$$

$$k_2 = -\frac{1}{2}$$

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

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

$$3 = 1 + n$$

$$n = 2$$

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