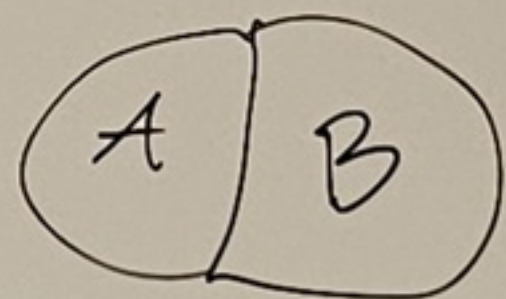


wzór-na-p

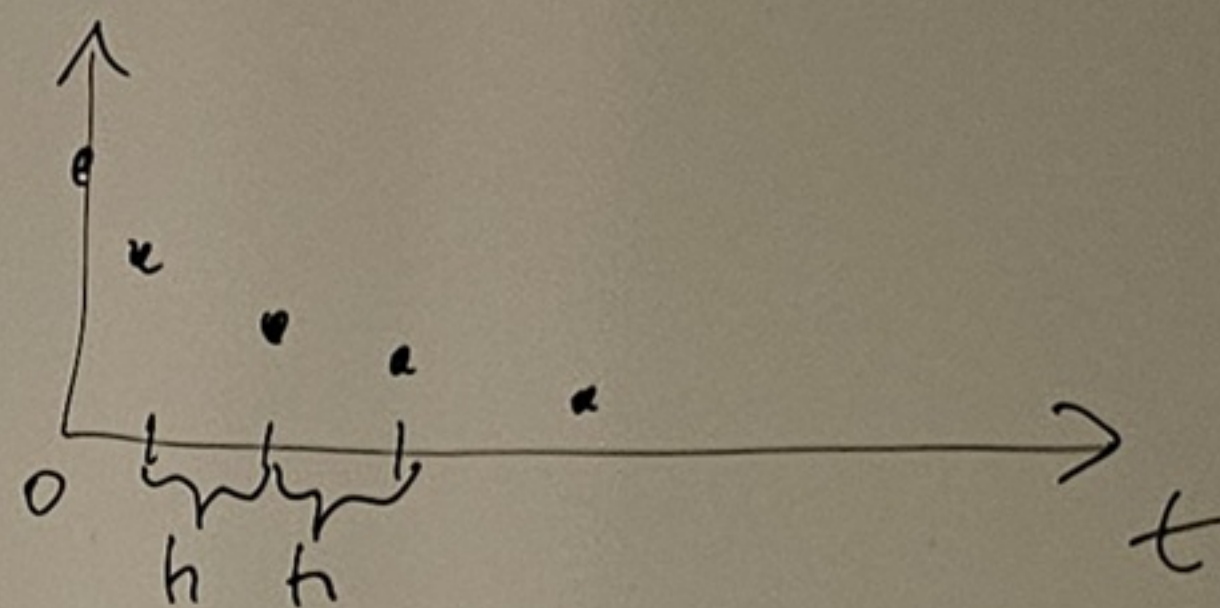
$$\dot{x} = -a x$$



x

(A - B)

x(t)



$a \in \mathbb{R}$
 $a \geq 0$

$a = \text{const}$



prędk. $\dot{x}$

$$\frac{x_{i+1} - x_i}{h} = \text{wzór-na-p}$$

$$x_{i+1} = x_i + h \cdot \text{wzór-na-p}$$

$$x_{i+1} = x_i + h \cdot (-a \cdot x_i)$$

schemat Eulera

dlaczego logia.pl

$$\dot{X} = \overbrace{ax}^{\text{wzór-na-p}}$$

X - ilość populacji

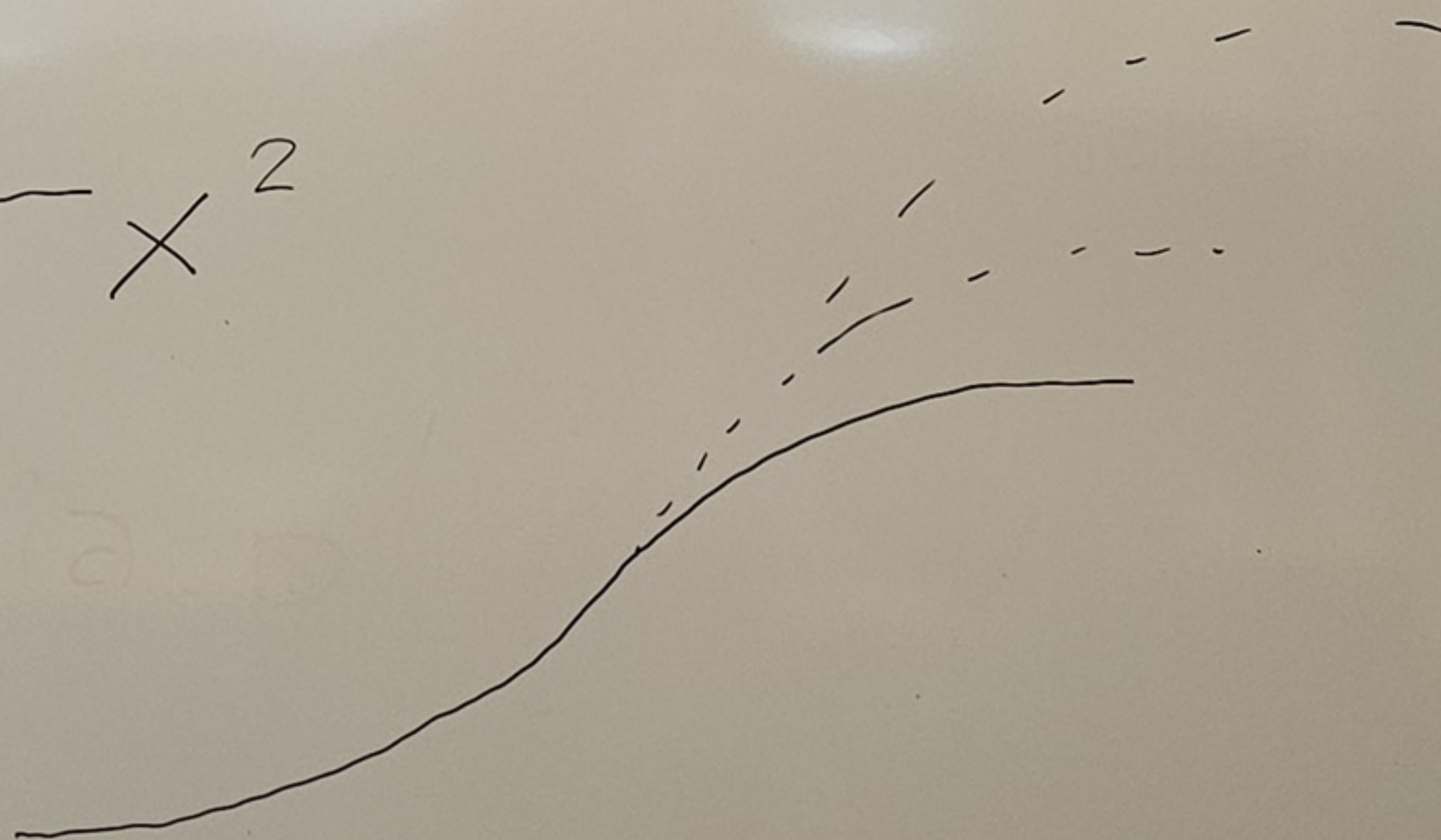
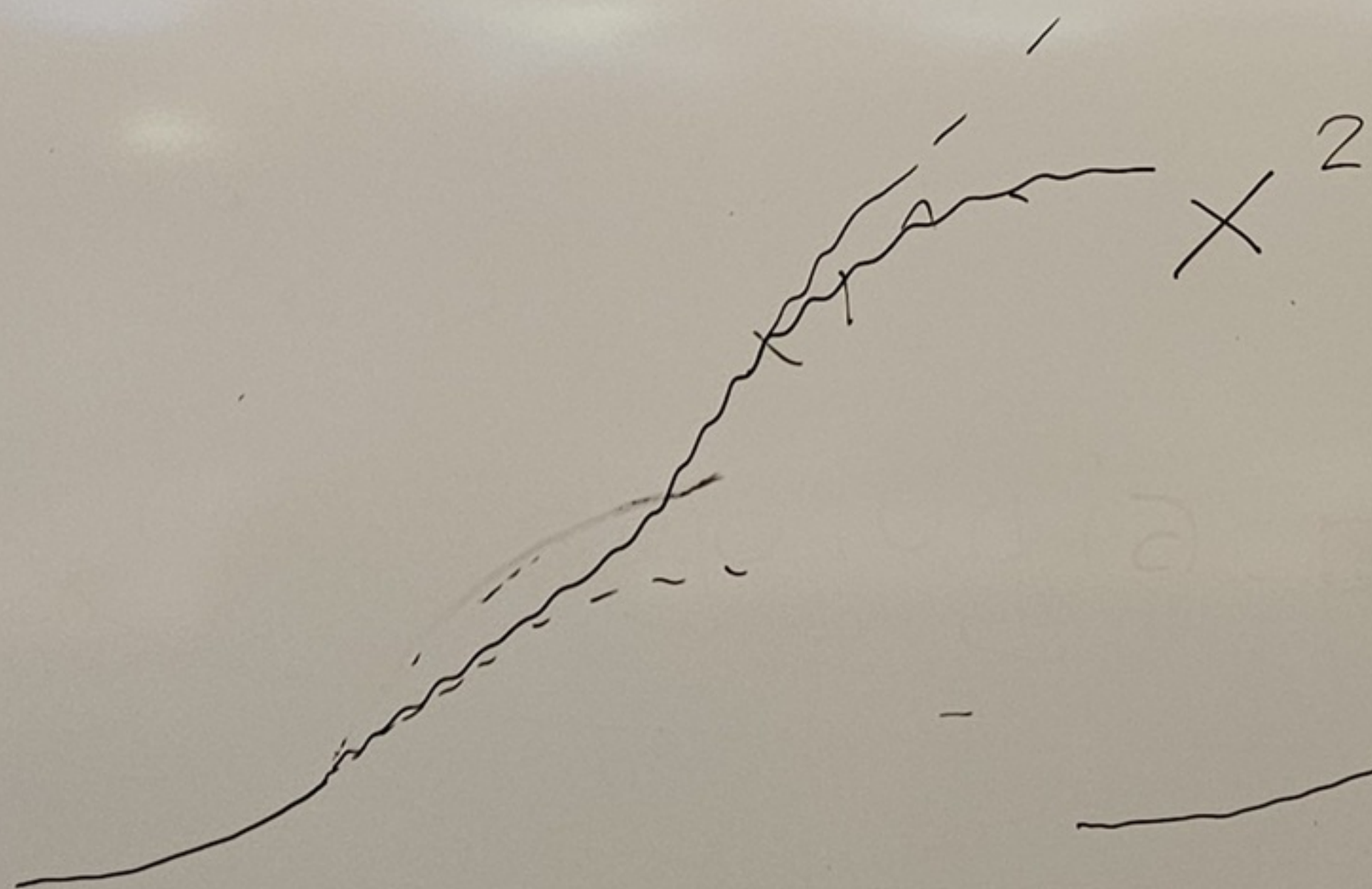
$$\dot{X} = ax - bx^2$$

$$a \in \mathbb{R}$$

$$\frac{X_{i+1} - X_i}{h} = \text{wzór-na-p}$$

$$X_{i+1} = X_i + h \cdot \text{wzór-na-p}$$

$$X_{i+1} = X_i + h \cdot (a \cdot X_i)$$



x - ilość ofiar

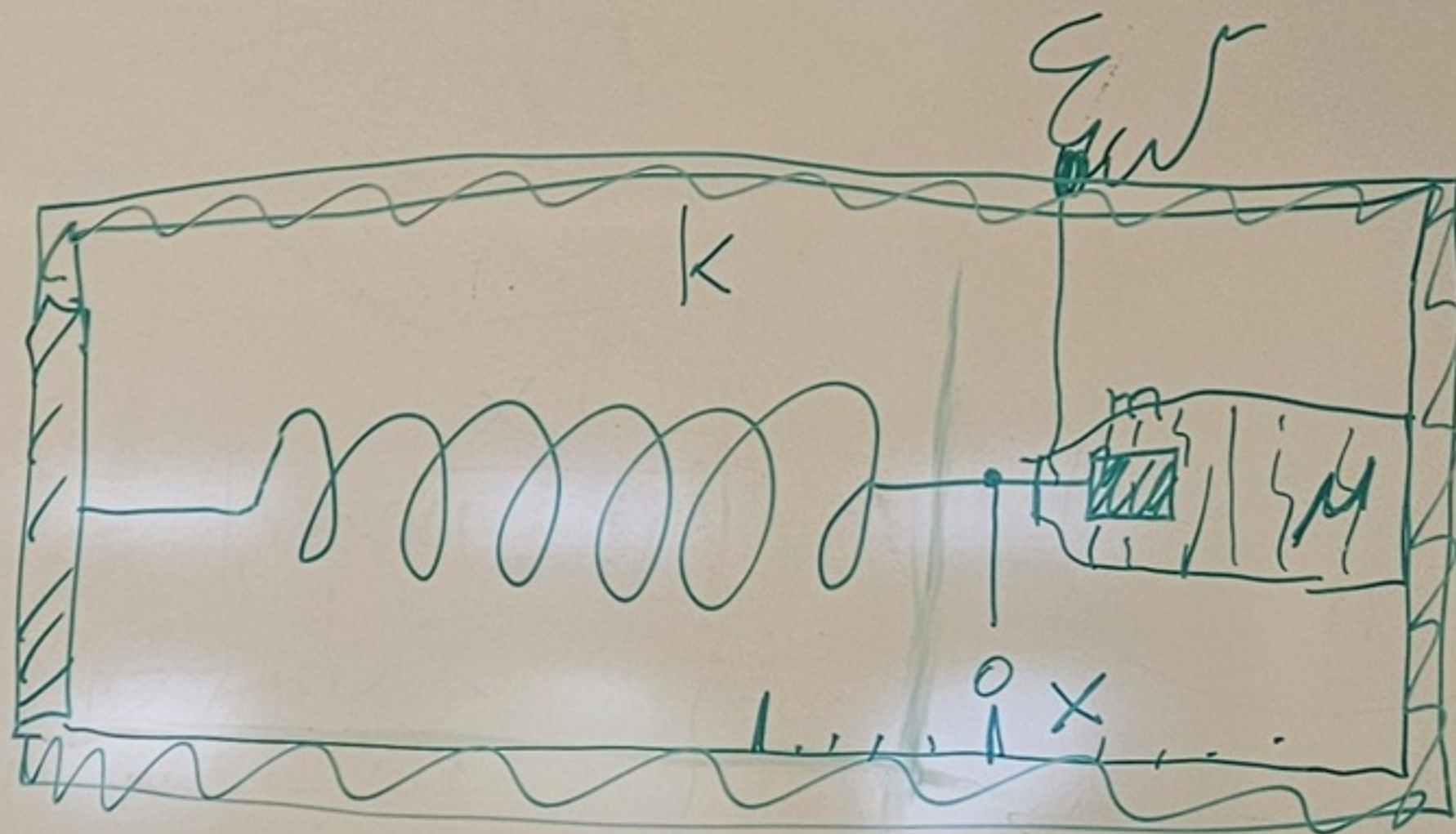
y - ilość drapieżników

$$\begin{cases} \dot{x} = a \cdot x - b \cdot x \cdot y \\ \dot{y} = -d \cdot y + c \cdot x \cdot y \end{cases}$$

$$\begin{aligned} x_{i+1} &= x_i + h \cdot (a x_i - b x_i y_i) \\ y_{i+1} &= y_i + h \cdot (\end{aligned}$$

$$F = m \cdot a$$

$\dot{x}$ = wzór na p.



$$\sum \text{sił} = \text{przysp} \cdot m$$

$$F_{\text{e}} + F_{\text{d}} = m \ddot{x}$$

$$-kx - \mu \dot{x} = m \ddot{x} \quad / : m$$

$$-\left(\frac{k}{m}\right)x - \left(\frac{\mu}{m}\right)\dot{x} = \ddot{x}$$

$$\ddot{x} + \frac{\mu}{m} \dot{x} + \frac{k}{m} x = 0$$

$$\dot{y} + \frac{\mu}{m} y + \frac{k}{m} x = 0$$

$$x \leftarrow x + h \cdot (\dots)$$

$$y \leftarrow y + h \cdot (\dots)$$

$$\begin{cases} \dot{x} = y \\ \dot{y} = -\frac{\mu}{m} y - \frac{k}{m} x \end{cases}$$

$$x_{i+1} = x_i + h(y_i)$$

$$y_{i+1} = y_i + h\left(-\frac{\mu}{m} y_i - \frac{k}{m} x_{i+1}\right)$$

$$\dot{x} = a(y-x)$$

$$\dot{y} = x(b-z) - y$$

$$\dot{z} = xy - cz$$

$$h = 0,01$$

$$T = 50$$

$$a = 8$$

$$b = 28$$

$$c = \frac{8}{3}$$

