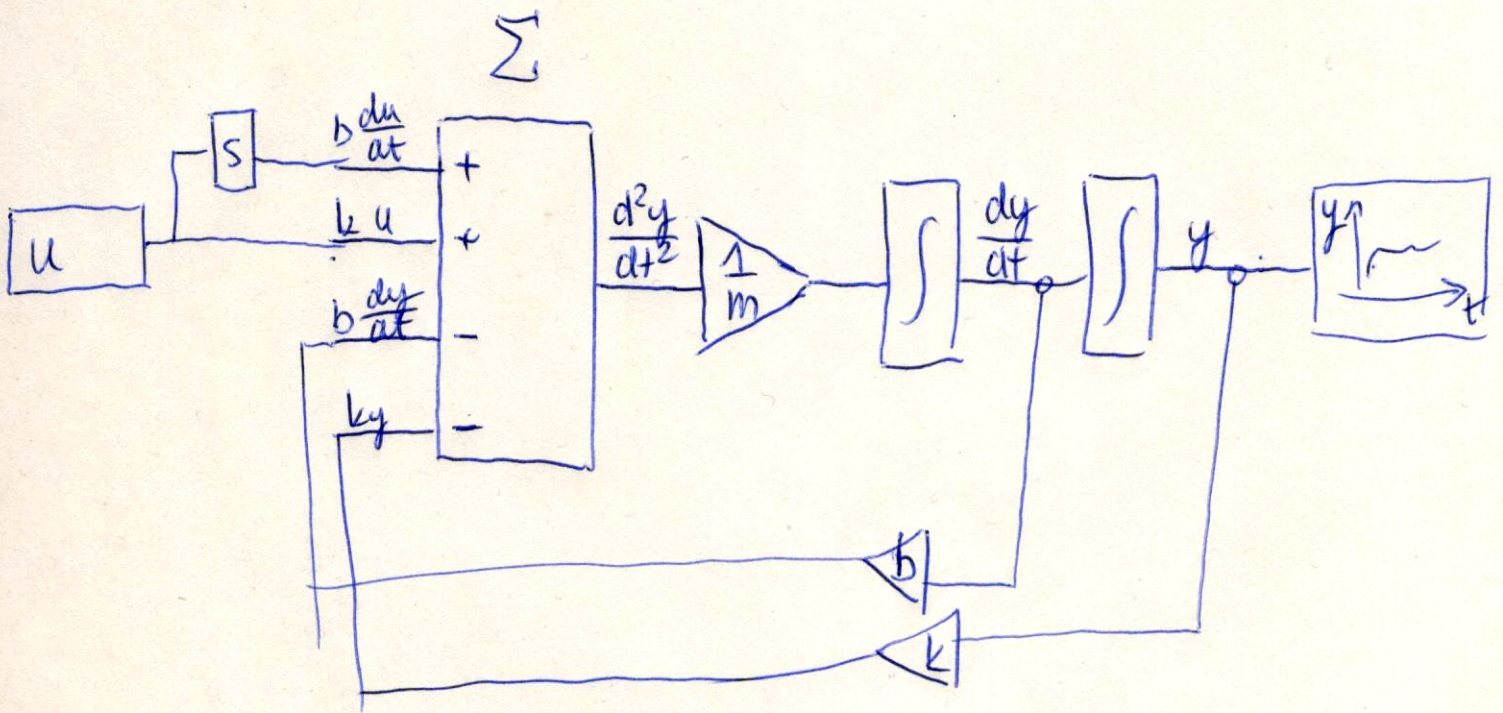


Metoda schematu operacyjnego.

$$m \frac{d^2 y}{dt^2} + b \frac{dy}{dt} - k \cdot y = b \frac{du}{dt} + k \cdot u$$

$$\frac{d^2 y}{dt^2} = \frac{1}{m} \left(b \frac{du}{dt} + k u - b \frac{dy}{dt} - k y \right)$$



Model transmitancový $y = y(t)$ $u = u(t)$

$$my'' + by' + ky = bu' + ku \quad | \quad L(\cdot)$$

$$L(my'' + by' + ky) = L(bu' + ku)$$

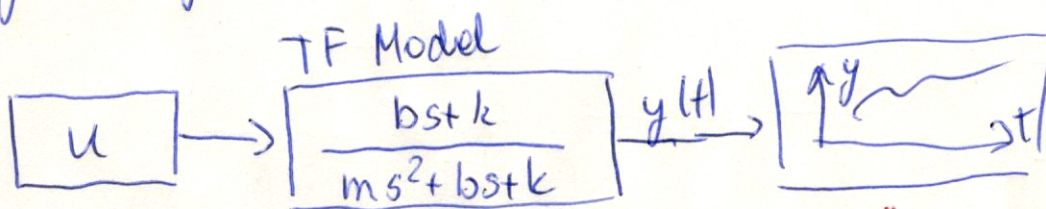
$$ms^2y(s) + bsy(s) + ky(s) = bs^0u(s) + ku(s)$$

$$y(s)(ms^2 + bs + k) = u(s)(bs + k)$$

$$\frac{y(s)}{u(s)} = \frac{bs + k}{ms^2 + bs + k} \Rightarrow \boxed{G(s) = \frac{bs + k}{ms^2 + bs + k}}$$

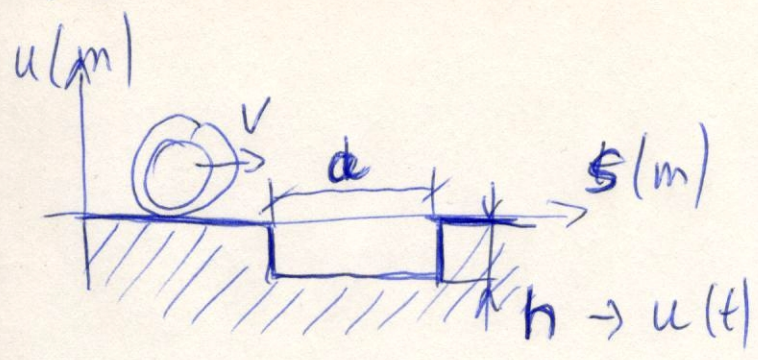


symulacja



↑ tyłko $y(t)$!

$$u(t) \rightarrow u(s) \rightarrow ?$$



dla $v = \text{const}$ $\vartheta = \frac{s}{t}$ $s = a$

$t = \frac{s}{v} = \frac{a}{v}$ np. $a = 30 \text{ cm} = 0,3 \text{ m}$
 $v = 50 \text{ km/h} \approx 13,9 \frac{\text{m}}{\text{s}}$

czas pokonywania dziury

$t = \frac{a}{v} = \frac{0,3}{13,9} = 0,021 \text{ s}$ ▽

dla $v = 25 \text{ km/h} \approx 6,94 \frac{\text{m}}{\text{s}}$

$t = \frac{a}{v} = \frac{0,3}{6,94} = 0,043 \text{ s}$ ▽

step signal $h = 10 \text{ cm} = 0,01 \text{ m}$

