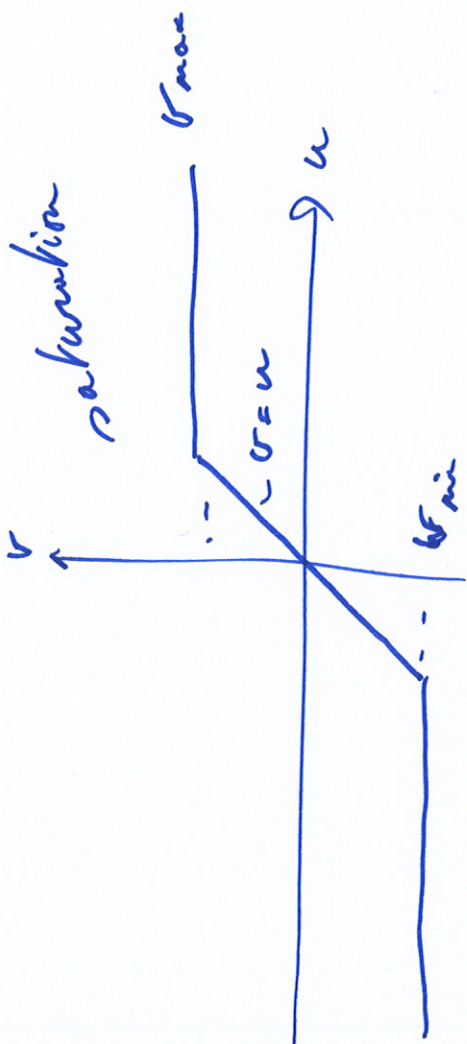
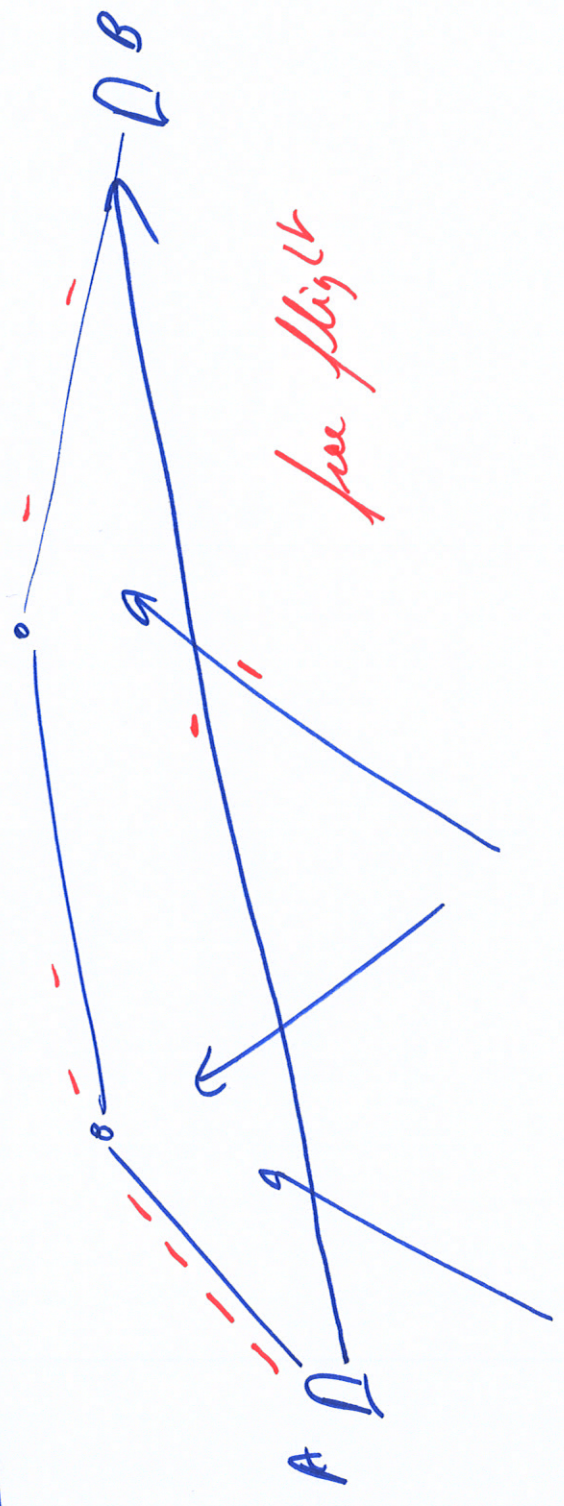
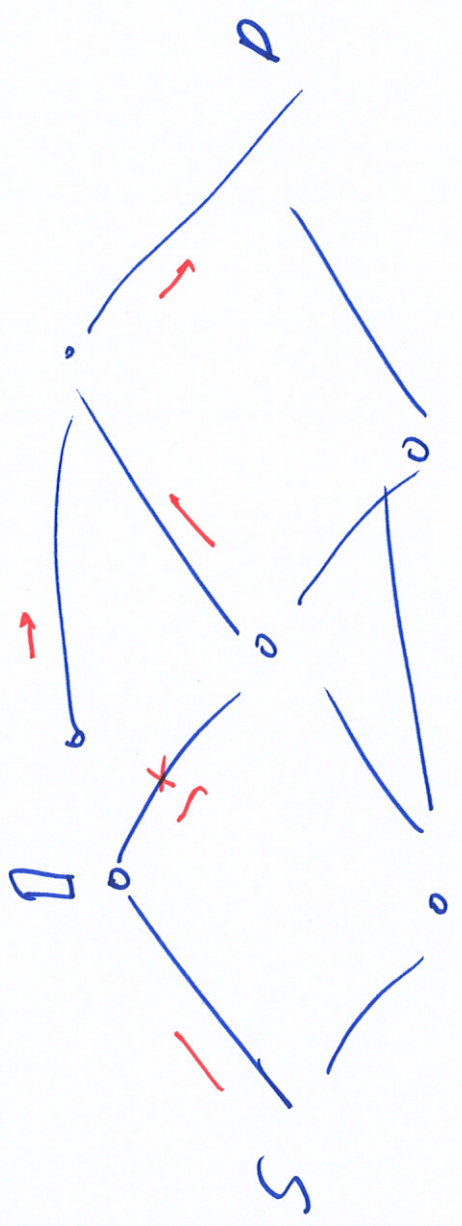


①

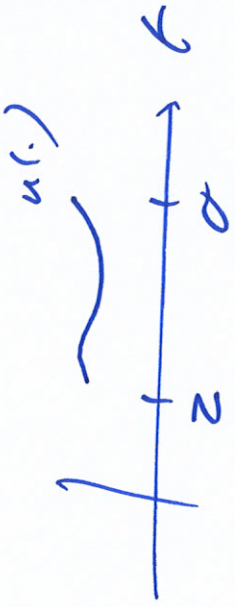


2



free flight

①

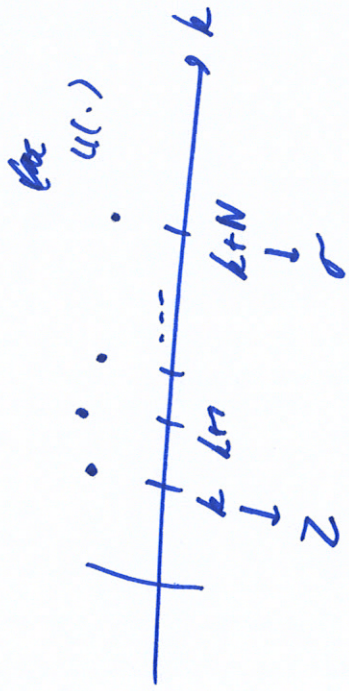


$$x(t) = f(x(t), u(t))$$

↑

$$x(\sigma) = x(\sigma) + \int_{\sigma}^z f(x(t), u(t)) dt$$

$\underbrace{\hspace{10em}}_{F(z, \sigma, u)}$



$$\begin{aligned}
 x(k+1) &= f(x(k), u(k)) \\
 x(k+2) &= f(x(k+1), u(k+1)) \\
 &= f(f(x(k), u(k)), u(k+1)) \\
 x(k+3) &= f(x(k+2), u(k+2)) \\
 &= f(f(f(x(k), u(k)), u(k+1)), u(k+2)) \\
 x(k+q) &= \underbrace{f(\dots f(f(x(k), u(k)), u(k+1)), u(k+2)), \dots, u(k+q-1))}_{N} \\
 &= F(k, k, u)
 \end{aligned}$$

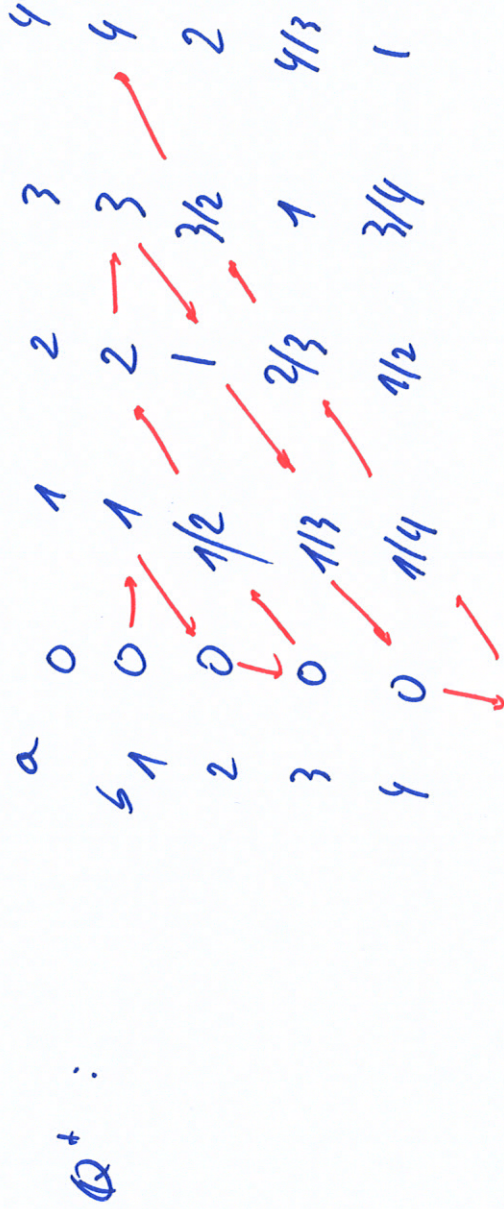
②

Countable sets

$$\mathbb{N} = \{0, 1, 2, 3, \dots\}$$

integers $\mathbb{Z} = \{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\} = \{0, 1, -1, 2, -2, \dots\}$

rational numbers $\mathbb{Q} = \left\{ \frac{a}{b} \mid a \in \mathbb{Z}, b \in \mathbb{N} \setminus \{0\} \right\}$



uncountable set
 \mathbb{R} (set of real numbers)