

Diophantine equations

General form

$$0 = ax_1 + bx_2x_3 + cx_2^3$$

$$a, b, c \in \mathbb{Z}$$

$$a \% 10 \%$$

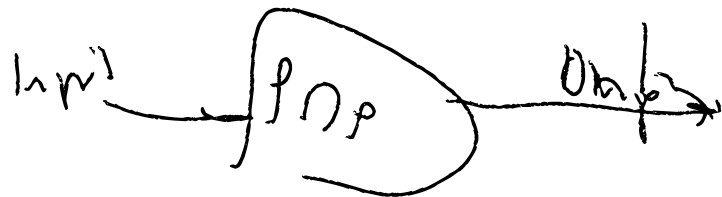
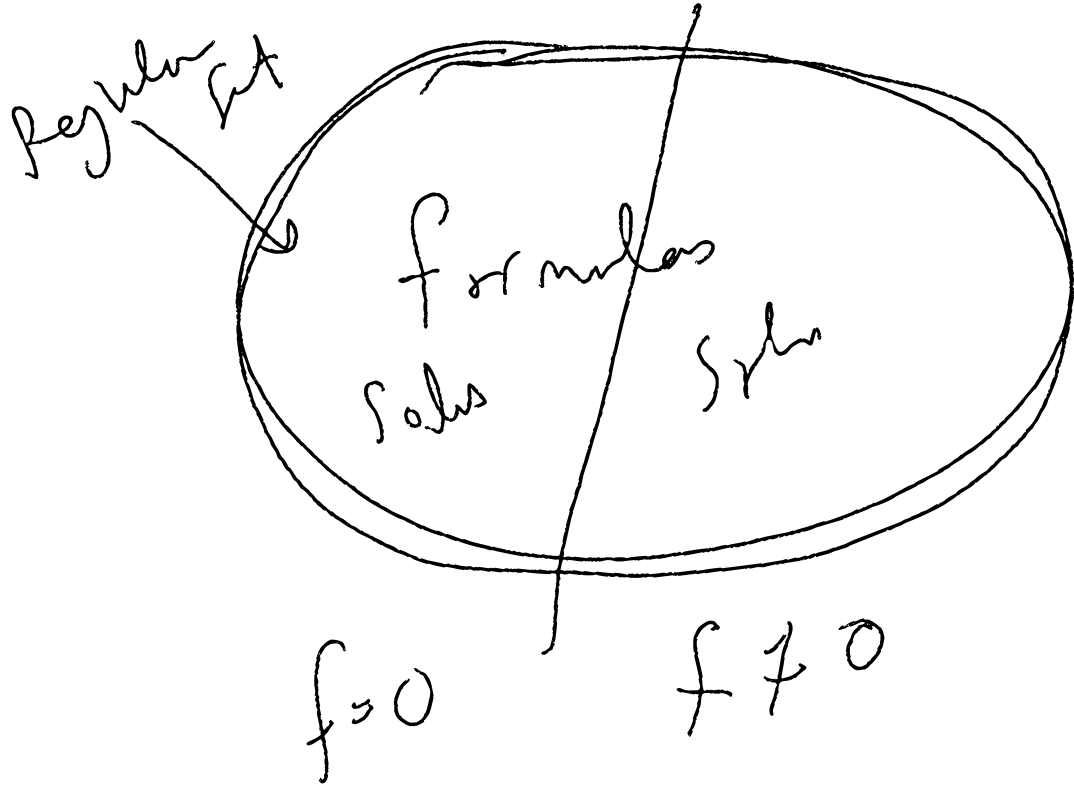
$$x \% 02 \%$$

$$C = a \% (0-9)^+ \%$$

$$V = x \% (0-9)^+ \%$$

$$S = F | F^+ | S | \epsilon$$

$$F = E | EF | \epsilon$$

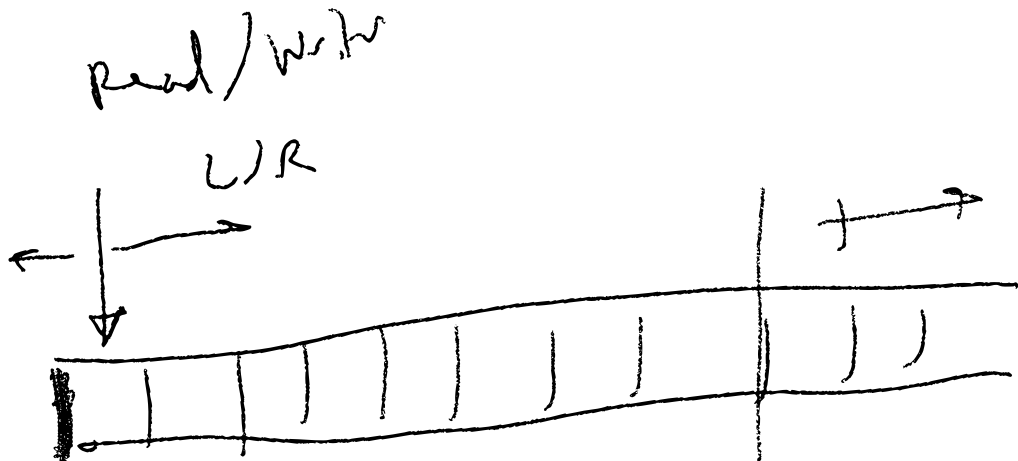


$$0 = ax_1 + bx_2x_3 + cx_2^3 + d$$

?  $\exists x_1, x_2, x_3 \in \mathbb{Z}$  st

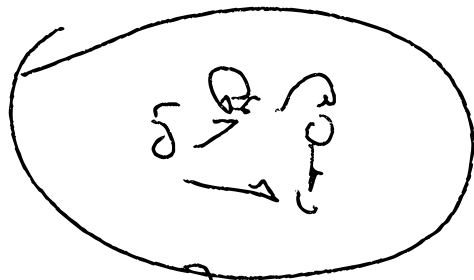
$$f(x_1, x_2, x_3) = 0$$

Memory



$\Gamma = \{ \dots \} \leftarrow \text{symbols}$        $\omega \in \Gamma$

$Q$

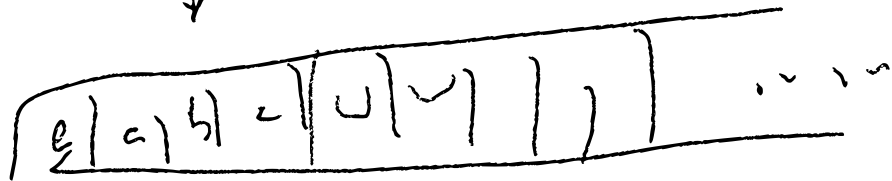


$q_0 \in Q$

$q \in \{q_{acc}, q_{rej}\} \in Q$

move  
L/R Read/Write

input alphabet

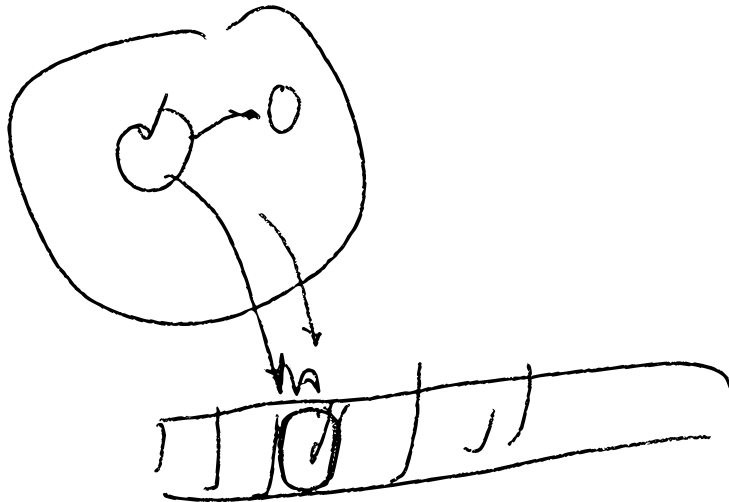


$\Sigma \cup \Gamma$

tape symbols

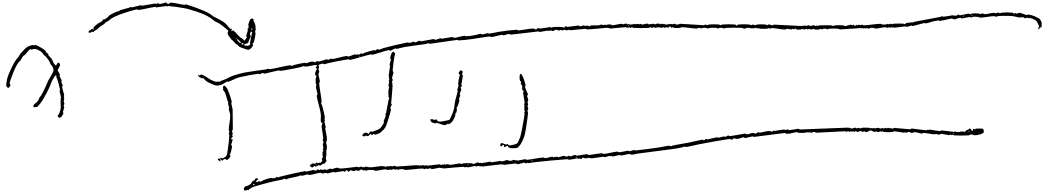
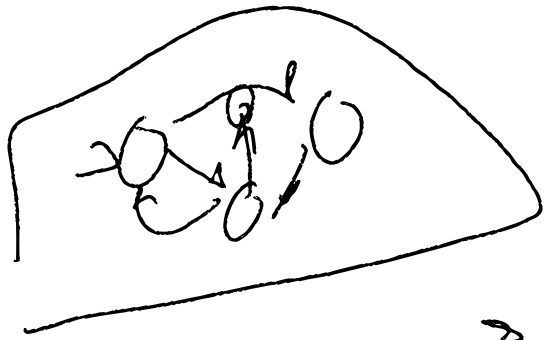
$\omega \in \Gamma, \omega \notin \Sigma$

$$f: \mathbb{Q} \times \mathbb{P}^1 \rightarrow \mathbb{Q} \times \mathbb{T} \times \mathbb{R}^3$$



$\delta \leftarrow \text{ps. gm}$

$f \in \Sigma^*$





$$L = \{ \sigma \in \Sigma^* \mid M(\sigma) = \text{accept} \}$$

$L \rightarrow$  Turing Recognizable

$L$  is Turing Recognizable

$$\bar{L} = \{ \sigma \in \Sigma^* \mid M(\sigma) = \text{reject} \}$$

$L \rightarrow$  Turing decidable

DFA  $\leftarrow$  image of elucidation

$\sigma \in \Sigma^*$   $\begin{cases} \rightarrow \text{accept} \\ \rightarrow \text{reject} \end{cases}$

Descriptor

PPP

$\sigma \in \Sigma^*$   $\begin{cases} \rightarrow \text{accept} \\ \rightarrow \text{reject or loop} \end{cases}$

Recognizability