$F = \{ f : N \to N \}$

$F_2 = \{ f_2 : N \to \{0,1\} \}$

$\mathbb{R} \to$

$3.14\ldots \to 1110$ ______

binary $.14\ldots$

$0.\underline{01}$ $\quad$ $0.0000001\ldots.$

f_1

f_2

f_3

$\vdots$

$f(i) = 1 - f_i(i)$

$F \to \mathbb{R}$

f	0 1 2 3
0	1 0 0 0 0 0 0
1	0 0 1 0 0 0 —
2	0 0 0 0 1 0 0 0
3	

L rec $\Leftrightarrow \exists D \; L = \{ x \mid \exists y \; \langle x, y \rangle \in D \}$

$\Leftarrow$ try y's one after another

$M \Rightarrow D(x,y) =$ accept of M on x within y steps

L is co-rec $\Leftrightarrow \exists$ dec D st $L = \{ x \mid \forall y \; \langle x, y \rangle \in D$

$\overline{L}$ $\quad \overline{L} = \{ x \mid \exists y \; \langle x, y \rangle \notin D$ $\overline{D}$

Harder still!:

$$L = \{ x \mid \exists y \, \forall z \; \langle x, y, z \rangle \in D \}$$

rec set of Deciders

	ε	a	b	ab	...
M_1	1	1	1	1	
M_2	0	0	0	0	
M_3					

L 0 1 . . .

L decidable? Yes: on $i^{\underline{th}}$ input, run enumerator until $i^{\underline{th}}$ TM is output, then run it on i, then do opposite.