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

R = \{ \pi \}

3.14 \ldots \rightarrow 1110 \quad \overline{b.m g. 14 \ldots}

0.01

f_1
f_2
f_3
f_4

\quad f(\pi) = 1 - f_2(\pi)

F \rightarrow R

\begin{array}{|c|c|c|c|c|}
\hline
f & 0 & 1 & 2 & 3 \\
\hline
0 & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 \\
2 & 0 & 0 & 0 & 1 \\
3 & 0 & 0 & 0 & 0 \\
\hline
\end{array}
Let \( Q \subseteq \mathbb{R}^2 \) be the set of all ordered pairs \((x, y)\) such that there exists \( z \) with \((x, y, z) \in D\), where \( D \) is a set of points.

We are interested in finding a set \( L \) such that:

\[ Q \subseteq L \subseteq \mathbb{R}^2 \]

Let \( L = \{ x \mid \exists y \in D : (x, y) \in L \} \).

We can then define \( D(x, y) = \{(x, y) \mid \exists z \in D : (x, y, z) \in D \} \).

To show the hardness of the problem, we consider the set \( \mathcal{L} \subseteq \mathbb{R}^2 \) defined as:

\[ \mathcal{L} = \{ x \mid \exists y \in D : (x, y) \in \mathcal{L} \} \]
The set of Decidables

L ⊆ \{a, b, ab, \ldots, M_1, M_2, M_3, \ldots\}

L decidable? Yes: on ith input, run enumerator until ith TM is output, then run it on i, then do opposite.