

Start Time:

Your name:

Stop Time:

Integrity signature:

Suggested time limit 15 minutes, not counting download and upload. Please add explanation if over 20 minutes.

1. Let $\Sigma = \{1\}$. Let

$$X = \{ \ulcorner M \urcorner : M \text{ computes a function } f : \Sigma^* \rightarrow \Sigma^* \text{ s.t. } f(\epsilon) = \epsilon \} .$$

Prove, without invoking Rice's Theorem, that X is not decidable. Is f c.e.? Is f co-c.e.? (Justify your answers.)