

## Assignment 2: Formal Learning Theory

Due April 10th (or 17th)

### Question 1

Suppose that some particular (recursively enumerable) language  $L$  is given. Show that the class of languages  $\{L \cup D \mid D \in \mathcal{L}_{fin}\}$  is identifiable/learnable.

### Question 2

(1) If a learner  $\phi$  converges on a text  $T$ , then  $\{\phi(T[n]) \mid n \in \mathbb{N}\}$  is finite.

1. Prove this.
2. Show that the converse is false.

### Question 3

(2) If a learner  $\phi$  converges on a text  $T$ , then  $L(\phi(T[n])) = \text{content}(T)$  for all but finitely many  $n \in \mathbb{N}$ .

1. Prove this.
2. Show that the converse is false. That is, show that it is not the case that (if  $\phi$  identifies  $T$ , then  $L(\phi(T[n])) = \text{content}(T)$  for all but finitely many  $n \in \mathbb{N}$ ) implies that  $\phi$  converges on  $T$ .