

# HW11

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1.

$L = \{ p(M)p(w) : M \text{ uses a finite number of tape cells when running on input } w \}$

This language is acceptable because it only has a finite number of tape so even if the input is greater than then memory storage it can only hold a finite number from the input. This language is not decidable because if  $M$  needs to process info from the whole input  $w$ , if there are  $w/2$  finite memory on the tape it can never process the whole tape.

$L = \{ p(M)p(w)01^n0 : M \text{ uses at most } n \text{ tape cells when running on input } w \}$