

**A. TRUE.** [If  $A^c$  is finite, then  $A^c$  is regular and hence decidable. And the complement of a decidable language is decidable.]

**B. FALSE.** [If  $M$  hangs on an input  $w$ , then  $N$  also hangs on  $w$ , so  $w$  is an element of neither  $L(M)$  or  $L(N)$ .]

**C. FALSE.** [The contents of the tape might be different the second time.]

**D. TRUE.** [Any context-free language is decidable, and the intersection of two decidable languages is decidable.]

**E. TRUE.** [A decider can inspect  $N$  to determine whether the start state has any incoming transitions.]