1. Check if the following problems are decidable.

   (a) $\{M|M$ has even number of transitions$\}$

   (b) $\{M|M$ accepts the string 101$\}$

   (c) $\{M|M$ has 42 states$\}$

   (d) $\{M|M$ has a useless state$\}$
      (Note: A state q of M is said to be useless if there is no input x on which M visits q.)

2. Argue that if L and $\bar{L}$ are semi-decidable then L is decidable.