1. (40 pts.) As a shorthard for regular expressions, let $\Sigma_a$ match any single alphabetic letter. Let $\Sigma_p$ match any single punctuation symbol. Assume that matching letters is case-insensitive, font-insensitive, etc. Write regular expressions for the following:

   (a) Write a regular expression that matches “Aggies” and any variation of “Aggies” produced by adding punctuation symbols between the letters.

   (b) Write a regular expression that matches “Aggies” and any variation of “Aggies” produced by changing, adding, or deleting a single letter.

2. (60 pts.) Determine whether the following problems are decidable or undecidable and prove your answer.

   (a) Given a Turing machine $M$ and a string $w$ as input for $M$, does $M$ ever read a blank?

   (b) Given a Turing machine $M$ and a string $w$ as input for $M$, does $M$ ever write a blank?

   (c) Given a Turing machine $M$, is $L(M)$ a regular grammar?