In-class Practice 21: Closure Again

Let A be an alphabet, and let f be a function that maps each symbol in A to some nonempty string. Given a string w in A^*, we define the string w^f as replacing every symbol in w by its corresponding f value. And we define for language L the language L^f as the set of all w^f for w in L.

(a) Show that if L is r.e. then so is L^f.

(b) Show (by means of an example) that L^f can be regular even if L is not.