QUIZ 3

4 pts
1. a) CFGs are useful for:
   - understanding concepts of computational power (more powerful than RE, less powerful than TM)
   - understanding concepts related to parsing: they are used to describe the syntax of programming languages
   - etc.

   b) $S \rightarrow aS | bS | e \ (a/b)^*$

2 pts
2. Yes. The PDA would work like:
   - push a if you see an a
   $S \rightarrow aSd | T$
   $T \rightarrow bTc | bc$

10 pts
3. let rec adjacents listN =
   match listN with
   | (h::i::t) -> if h = i then [h] else adjacents i::t
   | (h::[]) -> [-i]
   | [] -> [-i]

   \[ 3 \text{pts} \]

6 pts
4. let rec myMap f listM =
   match listM with
   | (h::t) -> (f h)::(myMap f t)
   | [] -> []

   \[ 3 \text{pts} \]