1. [8 pts] Give the type of the following OCaml expression. If there is a type error, write "error" and briefly explain why.

(a) "one"::[2;3]
   error: lists are homogeneous
(b) let z = 7 in ("z", z)
   string * int
(c) fun x y -> if x > y then (x,y) else (y,x)
   'a -> 'a -> 'a * 'a
(d) fun g a b -> a::(g b)
   ('a -> 'b list) -> 'b -> 'a -> 'b list

2. [6 pts] Give an OCaml expression of the following type without using type annotations.

(a) int -> int -> int
   Possible solutions:
   (+)
   fun a b -> a + b
(b) 'a -> 'b -> 'b * 'a list
   Possible solutions:
   fun a b -> b, [a]
   fun a b -> b, (a :: [])
(c) (string -> string) -> string
   Possible solution:
   fun x -> (x "") ^ ""
3. [6 pts] What is the value of the following OCaml expression?

(a) let x = 5 in
    let y = 4 in
    let x = 3 in
    (if x<y then x*y else x/y)

    12

(b) let rec f1 l c = match l with
    |[] -> c
    |h::t -> (h*c) + (f1 t (c-1))

    in f1 [1;2;3;4] 5

    31