CMSC330 Fall 2015 Quiz #2

Name: __________________________________

Discussion Time:  10am 11am 12pm 1pm 2pm 3pm
TA Name (Circle): Adam Maria Chris Chris Michael Candice
                              Amelia Amelia Samuel Josh Max

Instructions:
- Do not start this test until you are told to do so!
- You have 15 minutes for this quiz.
- This is a closed book exam. No notes or other aids are allowed.
- Answer essay questions concisely in 2-3 sentences. Longer answers are not needed.
- For partial credit, show all of your work and clearly indicate your answers.
- Write neatly. Credit cannot be given for illegible answers.

1. (4 pts) Give the types of the following OCaml expression
   a. (2 pts) [[1.0];[2.0;3.0]]   Type =

   b. (2 pts) let f (x::_) = x;;   Type =

2. (3 pts) Write an expression of type int -> int -> int
3. (4 pts) Write a recursive function `sumSmall` which takes in an int list `lst` and an integer threshold `x` and recursively sums up the elements of `lst` which are strictly less than `x`. For instance, given the list `[1;2;1;4;2;3] 3`, `sumSmall` will return 6.

4. (4 pts) Using map or fold and an anonymous function, write an Ocaml function `timesThree`, which takes in a list of floats `lst` and returns a list of floats in which each element is 3 times greater. For instance, calling `timesThree` on `[1.0; 2.0; 3.0]` would return `[3.0; 6.0; 9.0]`. If you do not use map or fold, you will not receive credit.

```
let rec map f l = match l with
    [] -> []
  | (h::t) -> (f h)::(map f t)

let rec fold f a l = match l with
    [] -> a
  | (h::t) -> fold f (f a h) t
```