Haskell Programming Exercises 2

1. For the following function, provide the signature and the result of the reduction of **interleave 3 [1,2,3]**

```
interleave x []
        = [[x]]
interleave x (y:ys)
        = [x:y:ys] ++ map (y:)(interleave x ys)
```

2. Provide the signature and the result of the reduction of perms [1,2,3] for the following:

```
perms []
    = [[]]
perms (x:xs)
    = [ zs | ys <-perms xs, zs <- interleave x ys ]
```

3. Write a function matAdd that will add two matrices. The sum of matirices is the sum of the elements which occupy the same position in each matrix. For example

```
1    3     5    6     6    9
        +          =
1    4     7    8     9    12
```

You should write the function so that it will sum any two nXn matrices.

4. The value of *e* can be determined by the following summation

$$e = \sum_{n \geq 0} 1/n!$$

Write a function that has one argument (the number of terms to be summed) and that returns the value of *e* using foldl.