LUND UNIVERSITY
Computer Science

Functional programming
16 December 2010, 14-19

Exam

1. a) Rewrite the defintions below so that only the name of the function appears on the left hand side of the equation and without using a lambda expression.

```
f x = 5 + 8/x
```

b) Do the same thing for the following definition

```
f x y = 3*y + x
```

2. Rewrite the following expression to use higher order functions from the standard prelude instead of list comprehensions.

```
[ f x | x <- [ y+4 | y <-ys, y<5]]
```

3. There is an error in the following definitions

```
data Digits = Zero | One | Two | Three | Four | Six | Seven | Eight | Nine

smallDigits = [Zero .. Three]
```

Explain what the problem is and suggest a way to fix it.

4. Haskell is a *pure* functional language. Explain what that means and what the consequences of this property are.

5. What is the type and the value of the following expression:

```
do ”merry”; return ”christmas”
```

6. Give the types for the following operator expressions:

a) `(.)(:)`
b) `(:(.))`
c) `((.):)`
d) `((:):)`