(+), (*), (-) :: Num a $=>$ a $->$ a -> a
(/) :: Fractional a $\quad>$ a -> a -> a
div, mod :: Integral a => a -> a -> a
13 'div' $5=2 \quad 13$ 'mod' $5=3 \quad 13 / 5=2.6$
(^) :: (Num a, Integral b) => a -> b -> a
even, odd :: Integral a => a -> Bool
(<), (<=), (>), (>=) :: Ord a => a -> a -> Bool
(==), (/=) :: Eq a $=>$ a -> a -> Bool
(\&\&), (||) :: Bool $->$ Bool $->$ Bool
not : : Bool -> Bool
max, min :: Ord a => a -> a -> a
$\max 37=7 \quad \min 37=3$
round :: (RealFrac a, Integral b) => a -> b
fromIntegral :: (Integral a, Num b) => a -> b
round 2.3 = 2 fromIntegral(length [1,2]) $+3.2=5.2$
To use the following functions: import Data.Char
isAlpha, isLower, isUpper, isDigit :: Char -> Bool
isAlpha 'a' = True isAlpha '3' = False
isLower 'a' = True isLower 'A' = False
toLower, toUpper :: Char -> Char
toLower ' A ' = 'a' toUpper 'a' = 'A'
digitToInt :: Char -> Int
intToDigit :: Int -> Char
digitToInt '3' = 3 intToDigit $3=$ '3'
Figure 1: Some functions on basic data

```
sum, product :: (Num a) => [a] -> a
sum [1.0,2.0,3.0] = 6.0
product [1,2,3,4] = 24
maximum, minimum :: (Ord a) => [a] -> a
maximum [3,1,4,2] = 4
minimum [3,1,4,2] = 1
concat :: [[a]] -> [a]
concat ["go","od","bye"] = "goodbye"
(!!) :: [a] -> Int -> a
[9,7,5] !! 1 = 7
head :: [a] -> a
head "goodbye" = 'g'
init :: [a] -> [a]
init "goodbye" = "goodby"
takeWhile :: (a->Bool) -> [a] -> [a]
takeWhile isLower "goodBye" = "good"
dropWhile :: (a->Bool) -> [a] -> [a]
dropWhile isLower "goodBye" = "Bye"
elem :: (Eq a) => a -> [a] -> Bool
elem 'd' "goodbye" = True
zip :: [a] -> [b] -> [(a,b)]
zip [1,2,3,4] [1,4,9] = [(1, 1), (2,4),(3,9)]
To use the following function: import Data.List
isPrefixOf :: Eq a => [a] -> [a] -> Bool
isPrefixOf "abc" "abcde" = True
```

Figure 2: Some functions on lists

