

```

(+), (*), (-) :: Num a => a -> a -> a
(/) :: Fractional a => a -> a -> a
div, mod :: Integral a => a -> a -> a
13 `div` 5 = 2      13 `mod` 5 = 3      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 3 7 = 7      min 3 7 = 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           and, or :: [Bool] -> Bool
sum [1.0,2.0,3.0] = 6.0                         and [True,False,True] = False
product [1,2,3,4] = 24                           or [True,False,True] = True

maximum, minimum :: (Ord a) => [a] -> a       reverse :: [a] -> [a]
maximum [3,1,4,2] = 4                            reverse "goodbye" = "eybdoog"

concat :: [[a]] -> [a]                          (++): [a] -> [a] -> [a]
concat ["go","od","bye"] = "goodbye"            "good" ++ "bye" = "goodbye"

(!!) :: [a] -> Int -> a                      length :: [a] -> Int
[9,7,5] !! 1 = 7                                length [9,7,5] = 3

head :: [a] -> a                               tail :: [a] -> [a]
head "goodbye" = 'g'                            tail "goodbye" = "oodbye"

init :: [a] -> [a]                            last :: [a] -> a
init "goodbye" = "goodby"                      last "goodbye" = 'e'

takeWhile :: (a->Bool) -> [a] -> [a]        take :: Int -> [a] -> [a]
takeWhile isLower "goodBye" = "good"          take 4 "goodbye" = "good"

dropWhile :: (a->Bool) -> [a] -> [a]        drop :: Int -> [a] -> [a]
dropWhile isLower "goodBye" = "Bye"            drop 4 "goodbye" = "bye"

elem :: (Eq a) => a -> [a] -> Bool        replicate :: Int -> a -> [a]
elem 'd' "goodbye" = True                      replicate 5 '*' = "*****"

zip :: [a] -> [b] -> [(a,b)]               To use the following function: import Data.List
zip [1,2,3,4] [1,4,9] = [(1,1),(2,4),(3,9)]

```

isPrefixOf :: Eq a => [a] -> [a] -> Bool
 isPrefixOf "abc" "abcde" = True

Figure 2: Some functions on lists