Q1. What is the type of following variables?

1. [‘a’,’b’,’c’] :: [Char]
2. (‘a’, ‘b’, ‘c’) :: (Char, Char, Char)
3. [(False, ‘0’), (True, ‘1’)] :: [(Bool, Char)]
4. ([False, True], [‘0’, ‘1’]) :: ([Bool], [Char])
5. [tail, init, reverse] :: [[a] -> [a]]
6. “Squid” ++ “clam” :: [Char]
7. [True, False, True, True] :: [Bool]
8. [True, False, ‘a’] → Type error
9. (True, False, ‘a’) :: (Bool, Bool, Char)

Q2. Type of the following functions:

1. second xs = head (tail xs)
    a. [a] -> a
2. swap (x,y) = (y,x)
    a. swap :: (t1, t) -> (t, t1)
3. pair x y = (x,y)
    a. pair :: t -> t1 -> (t, t1)
4. double x = x*2
    a. double :: Num a => a -> a

Q3. Write a Haskell function to find the cube of a Double. What is the type of this function?

```
dcube :: Double -> Double
dcube x = x * x * x
```

Q4. Function to find the sum of three doubles

```
dsum :: Double -> Double -> Double -> Double
dsum x y z = x + y + z
```

Q5. Function to reverse a list

```
rev :: [a] -> [a]
rev [] = []
rev [x] = [x]
rev (x:s) = (rev s) ++ [x]
```

Q6. Function to do the following:

1. Return head of a list

```
chead :: [a] -> a
chead [] = error "Empty list"
chead (x:s) = x
```

2. Return tail of a list

```
ctail :: [a] -> [a]
ctail [] = error "Empty list"
ctail (x:s) = s
```

3. Return the length of a list

```
clength :: [a] -> Integer
clength [] = 0
clength [x] = 1
clength (x:s) = 1 + clength s
```

4. Return sum of a list

```
csum :: (Num a) => [a] -> a
csum [] = 0
csum [x] = x
csum (x:s) = x + csum s
```

Q7. Function that returns one greater than the input value

```
add1 a = 1 + a
```

Q8. Function that always returns 0

```
always x = 0
```