Recursive Scheme!

Homework 5 (with extra examples)

Due: Monday 31st March, 10am (start of class)

- Write a function which multiplies the height from the root to each element in an S-expression.

```
> (timesdepth* 1 '(1 2 3))
'(1 2 3)
> (timesdepth* 4 '(1 2 3))
'(4 8 12)
> (timesdepth* 1 '((1) (2) (3)))
'((2) (4) (6))
> (timesdepth* 4 '((1) (2) (3)))
'((5) (10) (15))
> (timesdepth* 1 '((1) 2 ((3))))
'((2) 2 ((9)))
> (timesdepth* 4 '((1) 2 ((3))))
'((5) 8 ((18)))
```

- Test out your function with Racket.
- If you are stuck, write `timesdepth` that works on a list of atoms.
- You can assume that the input is a list.
- You can assume that the atoms are numbers.
- Hand in your Racket code, and your test cases. You need test cases. (This can be one piece of paper, if you wish).
- You can use auxiliary functions, as long as you give their implementation as well.