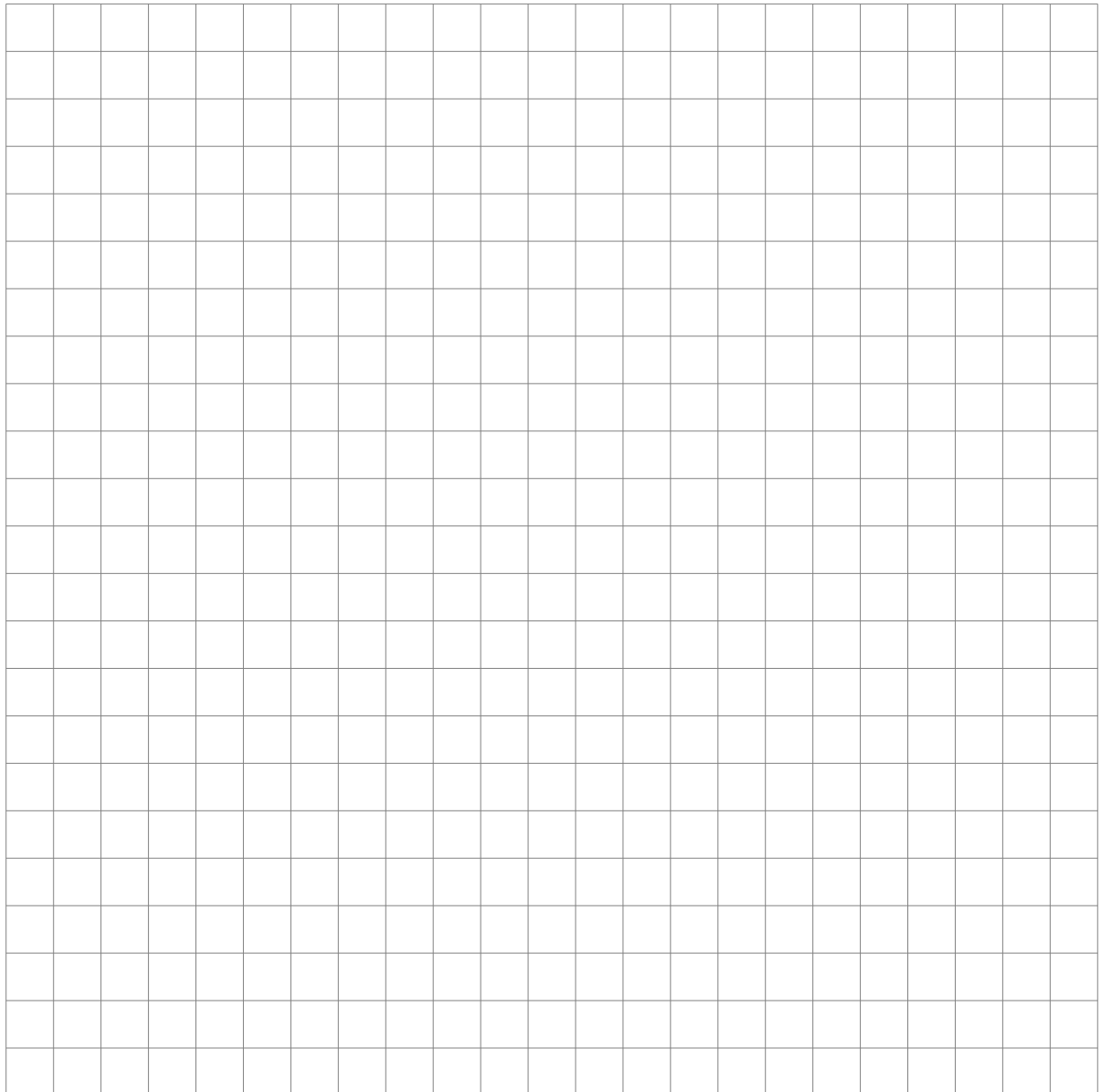


Exercise 3 (Insertion at the rank i – 5 points)

Write the function `insert_nth x i list` that inserts the value x at the rank i in the list $list$. The function has to raise an exception `Invalid_argument` if i is negative or zero, an exception `Failure` if the list is too short.

Application examples:

```
# insert_nth 0 5 [1; 2; 3; 4; 5; 6; 7; 8; 9];;  
- : int list = [1; 2; 3; 4; 0; 5; 6; 7; 8; 9]  
  
# insert_nth 0 10 [1; 2; 3; 4; 5; 6; 7; 8; 9];;  
- : int list = [1; 2; 3; 4; 5; 6; 7; 8; 9; 0]  
  
# insert_nth 0 12 [1; 2; 3; 4; 5; 6; 7; 8; 9];;  
Exception: Failure "out of bound".  
  
# insert_nth 0 (-2) [1; 2; 3; 4; 5; 6; 7; 8; 9];;  
Exception: Invalid_arg "negative rank".
```



Exercise 5 (Mystery – 2 points)

The go function is defined as

```
let go = function
  [] -> []
| e::list ->
  let rec what x = function
    [] -> []
  | e::list -> (e * x)::(what e list)
  in
  what e list;;
```

Give the results of the successive evaluations of the following phrases.

go [1; 1; 1; 1; 1] ;;

go [42] ;;

go [1; 2; 3; 4; 5] ;;

go [2; 21; 2; 21; 2; 21] ;;

