1. An integer $n$ is said to be a *sum of squares* if and only if there exist integers $x$ and $y$ such that $n = x^2 + y^2$. (For instance, 2 is a sum of squares, but 3 is not.) Write a function `sumofsq` that checks whether a given integer is a sum of squares.

You may define auxiliary functions.

```plaintext
- sumofsq;
  val it = fn: int -> bool
  - sumofsq(0);
    val it = true: bool
  - sumofsq(1);
    val it = true: bool
  - sumofsq(2);
    val it = true: bool
  - sumofsq(3);
    val it = false: bool
  - sumofsq(20);
    val it = true: bool
  - sumofsq(2000001);
    val it = false: bool
```

2. Write a 3-argument function `replace` which takes a list `ls`, an integer `n` and an value `x` as arguments, and returns a list where the element in the $n^{th}$ position has been replaced by `x`. The other elements in the list should stay the same as before. The positions start with 0. If `n` is not a valid position in `ls`, then `ls` itself should be returned.

```plaintext
- replace;
  val it = fn: 'a list * int * 'a -> 'a list
  - replace(nil, 2, 3);
    val it = []: int list
  - replace([1,2,4], 2, 3);
    val it = [1, 2, 3]: int list
  - replace([1,2,4], 5, 0);
    val it = [1, 2, 4]: int list
  - replace([2.3, 5.0, 2.001, 1.11], 1, 50.0);
    val it = [2.3, 50.0, 2.001, 1.11]: real list
```