

## Recursion Run Amok

- Let's try to define integer arithmetic (for non-negative integers) without ints as follows:
- Represent $n$ as a list of $n$ things (call this a num).
- Define "primitive" operations:


## Slide 3

* boolean isZero(num N);
* num add1 (num N);
* num sub1 (num N) ; (Gives runtime error if isZero(N).)
- Try to build arithmetic and relational operations using primitive operations and recursion...
- Do you think this is doable in actual code? (Yes!) Will it be fast? (Not very!

Particularly slow for exponentiation.)

## Minute Essay

- None - sign in, and have a nice break!


## Slide 4

