

The Syracuse Function

- ◆ The HoTPO rule (Half or Triple Plus One):

```
def syracuse(n):  
    if n % 2 == 0:  
        return n//2  
    else:  
        return 3*n+1
```

- ◆ Each integer yields another integer; forms a chain
 - ◆ $13 \rightarrow 40 \rightarrow 20 \rightarrow 10 \rightarrow 5 \rightarrow 16 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$
 - ◆ At 1, it loops: $1 \rightarrow 4 \rightarrow 2 \rightarrow 1 \dots$

Successive Values

```
def syr_list(n):  
    seq = [n]  
    while n != 1:  
        n = syracuse(n)  
        seq.append(n)  
    return seq
```

- ◆ Not “wrong”
- ◆ Limited to always creating a sequence