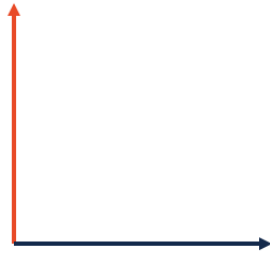
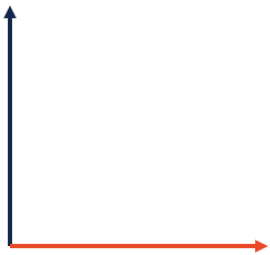


**Today's Goal:**

**Motivation:**

Big-O is defined as:

Visually:



**Plan of Action:**

We will begin by defining a function that defines the least number of nodes in an AVL tree of height  $h$ .

**$N(h)$ :**

**State a Theorem:**

An AVL tree of height  $h$  has at least \_\_\_\_\_.

**I.** Consider an AVL tree and let  $h$  denote its height.

**II.** Case: \_\_\_\_\_

**III.** Case: \_\_\_\_\_

IV. Case: \_\_\_\_\_

By an inductive hypothesis (IH):

We show that:

V. Using a proof by induction, we have shown that:

...and by inverting our finding:

**Summary of Balanced BSTs:**

Advantages	Disadvantages

**Iterators ...are amazing!**

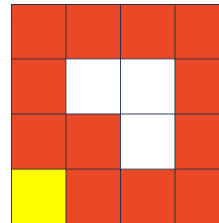
Three weeks ago today (Sept. 27), you were introduced to iterators.

Iterators:

1. Give client code access to our data
2. Encapsulate access to our data regardless of data structure  
*...and iterators are not new – we provided one for you in MP3!*

**Iterators in MP4**

As part of MP4, you will write your own iterator:



```
FloodFillImage.cpp (partial)
ImageTraversal & traversal = /* ... */;
for (const Point & p : traversal) {
}

```

- CS 225 – Things To Be Doing:**
1. Exam #6 live now! (Programming exam: lists, trees)
  2. MP4 extra credit submission ongoing!
  3. lab\_avl starts today
  4. Daily POTDs