CMSC 420 - Help Session

Diagram:

- \( p + \text{size} \)
- \( p = \text{size} \)
- \( p + \text{size} = 1 \)
- \( q + \text{size} \)
- \( q = \text{size} \)
- \( p - q = \text{size} \)
null
2-3 Trees:  
Q: On insert, we always split  
(never key-rotate/adoption)  
Why?  

With deletion - adoption may be needed 

Q: On insert, we always split  
(never key-rotate/adoption)  
Why?  

With deletion - adoption may be needed
left complete

depth
- 0
   1
   2
   3
   4

height = max depth

full

leaf

int
cannot have

complete

o
Unin-find

Q: Start init state

union

finds

13 unions

(\text{not interspersed})

O(n) \neq O(n \times \ln n)

find

\text{Height} = 1 + \log_2 \frac{n}{2} = \log n