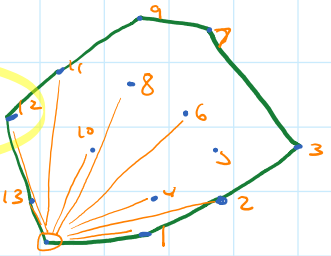
gift wrapping: $O(nh)$

GRAHAM SCAN ALGORITHM: $O(n \log n)$

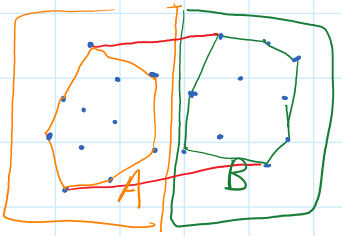
1. Choose the lowest point as the anchor — $O(n)$
2. Sort all other points by their angle with the anchor — $O(n \log n)$
3. Construct the hull following this ordering: — $O(n)$
   - Append next point to the hull
   - Remove any reflex angles ("right turns") that result



DIVIDE AND CONQUER ALGORITHM — $O(n \log n)$

1. Sort points by x-coord. — $O(n \log n)$
2. Divide the points: A = left half of the points, B = right half — $O(1)$
3. Find convex hulls of A and B recursively — call divide and conquer on A and B. If A or B contains ≤ 3 points, then stop dividing; return these points. — $O(\log_2 n)$ divisions
4. Merge hulls of A and B — $O(n)$ (most tricky part)

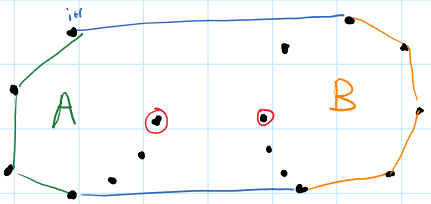
$O(n \log n)$



$$\log_A n = \frac{1}{\log_x A} \log_x n$$

$$O(\log_A n) = O(\log_x n)$$

Merging two hulls in $O(n)$ time:



Identify rightmost vertex of A, and leftmost vertex of B.