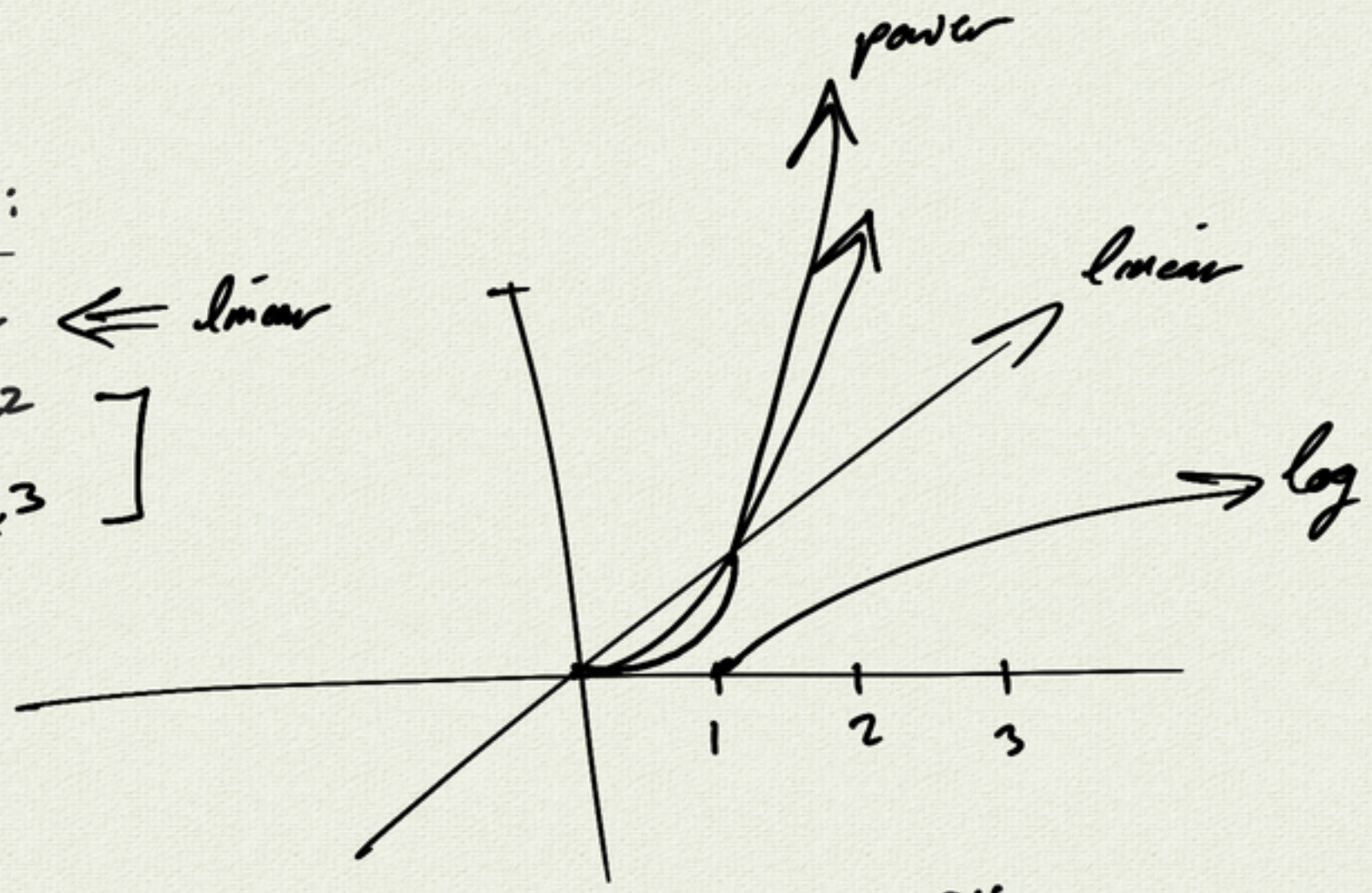
Some math:

$f(x) = x$ ⇐ linear

$g(x) = x^2$]

$h(x) = x^3$]



2^x : 1, 2, 4, 8, 16, 32, ... 1024 2^{10}

$\log = \log_2$: $\log 1024 = 10$

$\log 32 = 5$

$\log \underbrace{1024 \cdot 1024}_{} = 20$

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linear search: $O(n)$

binary search: $O(\log n)$

"big O notation"
"little o notation"

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sorting:

insertion sort: $\underline{1} + \underline{2} + 3 + \ldots \underline{+} \underline{n} =$

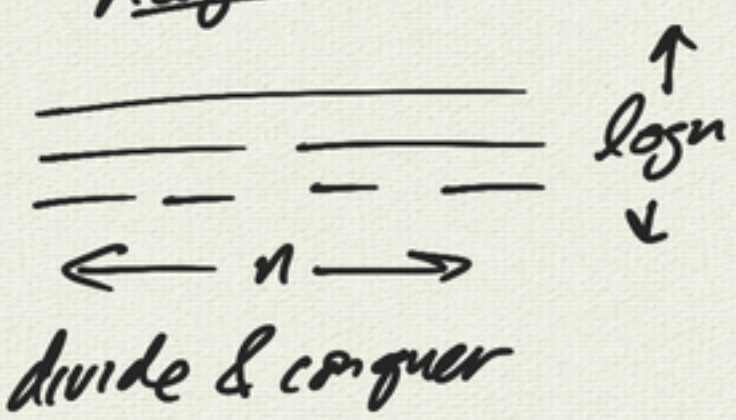
$O(n^2)$ $\left(\frac{n+1}{2}\right) n \approx n^2$

selection sort: $O(n^2)$

bubble sort: $O(n^2)$

merge sort: $O(n \log n)$

merge sort:



divide & conquer