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Assignment 3

1)

$100, \log^4 n, 2^{\log_2 n}, 2^{3\log_2 n}, n^3 \log^2 n, (3/2)^n, 2^n$

2)

a) O(n) - for finding the the position and inserting an element
   O(n) + O(1)
b) O(n) - for binary search and shift
   O log(n) + O(n) = O(n)
c) O(n) :- for search and shift
   O(n) + O(n) = O(n)
d) O(n) :- for binary search and shift -
   O log(n) + O(n) = O(n)

3)

a) A **Queue** , because it is a first-in, first-out structure which is a better implementation for customer service.
b) **Linked-list** is a better structure for random access because they can grow dynamically and don't need to be contiguous.
c) **Stacks** have a last in first out structure which is suitable to output items in opposite order.
d) **Array** is the correct implementation for constant time. Arrays need a contiguous block of memory.