1. $2n^4$, c = 2, n0 = 4
2. $n^2 \leq 2n^2 - n \leq 2n^2$ when c1 = 1, c2 = 2, n0 = 1
3. No, holds only for n0 <= 0 which means that n0 is negative which cannot happen as both constants n0 and c must be positive.
4. O(1), O(lg n), O(n), O(n lg n), $O(n^2)$, $O(n^2 \lg n)$, $O(n^3)$, $O(2^n)$, O(n!), $O(n^n)$
5.
   a. 1000
   b. 204,095
   c. 1897
   d. 442
   e. 8
6. From n = 7 onward, the first algorithm beats the second algorithm. I got this answer by making a table of values and plugging in values from 1 to 10 to find a transition between the two algorithms.
7.
   a. Answer: Θ(n lg(n))
   b. Answer: $\Theta(\sqrt[3]{n})$
   c. Answer: $\Theta(n^3)$
   d. Answer: Θ(n)