Part 2.

ex1 $T(n) = n = O(n)$

ex2 $T(n) = n(n-1) = O(n^2)$

ex3 $T(n) = n + n - 1 = 2n - 1 = O(n)$

ex4 $T(n) = n^2 \cdot \log_2 n = O(n^2 \log n)$

ex5 $T(n) = n \cdot \frac{n}{2} + n = O(n^2)$

ex6 $T(n) = 1 + T(n-1) = O(n)$

ex7 $T(n) = n \cdot T(n-1) = O(n^2)$

ex8 $T(n) = 1 + T(n/2) = O(\log n)$

ex9 $T(n) = n \cdot T(n/2) = O(n \log n)$

ex10 $T(n) = 2T(n-1) = O(2^n)$

Part 1 d) $10^5 = \log_2 n \Rightarrow n = (10^5)^2 = 10^{10}$

$10^5 = n \Rightarrow n = 10^5$

$10^5 = n \log n \Rightarrow n \approx 7710$

$10^5 = n^2 \Rightarrow n = \sqrt{10^5} \approx 316$

$10^5 = n^3 \Rightarrow n = \sqrt[3]{10^5} \approx 46$

$10^5 = 2^n \Rightarrow n = \log_2(10^5) \approx 17$