Reading. Sections 7.1, 7.2, 7.3, and 7.4

1) Answer each part TRUE or FALSE.
   a) \(2n = O(n)\)
   b) \(n^2 = O(n)\)
   c) \(n \log^2 n = O(n^2)\)
   d) \(\sqrt{n} = O(\log n)\)
   e) \(3^n = 2^{O(n)}\)
   f) \(2^{2^n} = O(2^{2^n})\)

2) Answer each part TRUE or FALSE.
   a) \(n = o(2n)\)
   b) \(2n = o(n^2)\)
   c) \(3^n = o(2^n)\)
   d) \(n = o(1)\)
   e) \(n = o(\log n)\)
   f) \(1 = o(1/n)\)

3) Show that P is closed under union, concatenation, and complement.

4) Show that NP is closed under union and concatenation.