Problem Set 1:
Asymptotic Notation and Recurrences

Due: Thursday, January 16, 2014, at the beginning of class (12:40PM)

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1. Work problem 3-3a on page 61-62 ("Ordering by asymptotic growth rates").

    Hints:

    - Refer to Section 3.2 and Appendices in text for special mathematical relationships that may be useful.

    - In particular, note on page 58 the following identities:
        - $n! = o(n^n)$
        - $n! = \omega(2^n)$
        - $\lg(n!) = \theta(n \lg n)$

    - Also note the definition of iterated log (i.e., lg*n) on page 58.

    - When comparing values *a* and *b*, you might try the following actions:

        - Compare $\lg(a)$ and $\lg(b)$, which might give you more insight

        - Compare 2^a and 2^b, which again might be more intuitive

        - Or, use substitution, such as replacing a term *n* with lg *n*