Last name _____

First name _____

LARSON—MATH 550—CLASSROOM WORKSHEET 07
Two Tricks.

Concepts & Notation

- Sec. 1.1 & Sec. 1.2 T_n, recurrence (recurrence relation), mathematical induction, basis, solving recurrences
- Sec. 2.1 $[m = n]$ notation, sum notations.
- Sec. 2.2 Two "tricks".

(Sec. 2.2). Given a recurrence of the form $a_n T_n = b_n T_{n-1} + c_n$, you can get a "nicer" recurrence by multiplying through by (any constant multiple of):

$$s_n = \frac{a_{n-1} a_{n-2} \dots a_1}{b_n b_{n-1} \dots b_2}$$

1. What would this yield for $T_n = 2T_{n-1} + 1$?

The Quicksort Recurrence

The famous quicksort algorithm for sorting a list (of items from a linearly ordered collection) takes C_n steps where:

$$C_0 = C_1 = 0$$

$$C_n = (n+1) + \frac{2}{n}\sum_{k=0}^{n-1} C_k \text{ (for } n > 1)$$