MAD 3105 DM2 **Quiz 5v** 23 Feb 1996 **Name:** _____

Show **ALL** work for credit; be neat; and use only **ONE** side of each page of paper.

1. Solve by iteration $s_n = 5s_{n-1} + 3; s_0 = 1$ and simplify.

2. It can be shown that the run time of a divide and conquer method of multiplying two n-digit numbers satisfies the recurrence relation $s_n = 3s_{n/2} + 5$ and $s_1 = 1$. Solve the recurrence by using the substitution $n = 2^k$. Is it faster or slower than the usual n^2 method?