MATH 1AA3   **Written Assignment #2**   **February 16, 2012**

This assignment is due at the start of class on Monday March 5, 2012.

1. Review the principle of mathematical induction found on page 76 of Stewart. Consider the sequence a_n that satisfies the recurrence relation $a_n = \sqrt{3a_{n-1}}$ starting from $a_1 = 1$.

   (a) Show using induction that the sequence is bounded above by $L = 3$.

   (b) Show using induction that the sequence is increasing.

   (c) Conclude that the sequence converges and calculate the limit.

2. Prove the following limit law directly from the definition: if a_n is bounded and $b_n \to \infty$ then $a_n + b_n \to \infty$.

3. Stewart Exercise 11.3, #33 (p. 721).

4. Stewart Exercise 11.3, #38 (p. 721). Make sure you use equation $\boxed{3}$ in Ch 11.3 to compute the estimate.

5. Stewart Exercise 11.4, #32 (p. 726).

6. Stewart Exercise 11.4, #34 (p. 726).

7. Stewart Exercise 11.5, #20 (p. 731).

8. Stewart Exercise 11.5, #28 (p. 731).

9. Stewart Problems Plus, #5 (p. 782).

10. Stewart Problems Plus, #6 (p. 782). Hint: consider the product of two geometric series.