HOMEWORK 14

1) Let $a_1 = 1$ and $a_n = \sqrt{3a_{n-1} + 4}$ for $n \geq 2$. Prove $a_n < 4$ for all $n \in \mathbb{N}$.

2) Use monotone convergence to prove the following converge and then find the limit using properties of subsequences.

   a) $s_1 = 1$ and $s_n = \frac{1}{4}(s_{n-1} + 5)$ for $n \geq 2$

   b) $s_1 = 2$ and $s_n = \frac{1}{4}(s_{n-1} + 5)$ for $n \geq 2$