Math 3100 Quiz 2

Name _____

1. (10 points) Let $\{a_n\}$ be the sequence given recursively by

$$a_{n+1} = \frac{2a_n + 1}{a_n + 2}$$

with $a_1 = 2$.

   (a) Prove by induction that $a_n - 1 > 0$ for all $n \in \mathbb{N}$.

   (b) Prove that $\{a_n\}$ is a decreasing sequence.