Mini-Homework 13

Will Boland

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Question 1

Proof (induction on n)
(Base step, n = 2)
$3^2 = 9 > 8 = 2^{2+1}$

(induction step)
assume that $3^k > 2^{k+2}$ for any $k \geq 2$
(Goal: $3^{k+1} > 2^{k+2}$)
$3^{k+1} = 3^k * 3^1$
$= 3^k * 3$
$> 2^{k+2}$
$= 2^k * 2^2 = 2^k * 4$ Since k $\geq$ 2, we know that $2^{k+2} \geq 16$
Therefore $3^k > 2^{k+2}$ $\square$