e. $\lim_{n\to\infty} 3^{2n-1} = \infty$

show that it is monotonic increasing since limit is positive infinity

Prove $a_n \leq a_n + 1, if\ a_n = 3^{2n-1}$ since $a_1 \leq a_2 \leq a_3 \leq \cdots \leq a_k$

$a_n \leq a_n + 1$

$3^{2n-1} \leq\ 3^{2(n+1)-1}$

$\frac{2^{2n-1}}{3^{2n+1}} \leq 1 \rightarrow 3^{2n-1-2n-1} \leq 1$

$3^{-2} \leq 1$

$\mathbf{\frac{1}{9} \leq 1}$

When listing the first 5 terms, we get { 3, 27, 243, 2187, 19683 } and it is bounded below at 3. Therefore, $\lim_{n\to\infty} 3^{2n-1} = \infty$ is monotonic increasing and bounded below at 3