12. 无穷等比数列$\{a_n\}$满足首项$a_1>0, q>1$，记$I_n=\{x-y|x,y\in[a_1,a_2]\cup[a_n,a_{n+1}]\}$，若对任意正整数$n$集合$I_n$是闭区间，则$q$的取值范围是_____.