Homework 6

MATH 231

Due: Thursday, Mar. 7th, 2024

Problem 1. Let $r > 0$ be a positive real number. Show that

$$\sum_{k=0}^{n} r^k = \frac{r^{n+1} - 1}{r - 1}$$

for all natural numbers $n \geq 0$.

Problem 2. Consider the sequence defined by $a_{n+1} = 3a_n + 2$ with $a_1 = 2$. Show that $a_n = 3^n - 1$ for all $n \geq 1$.