Homework 8 - Intro to Number Theory

CS241

Intro to number theory

1. Convert the decimal number 89 into base 6 and into base 7.

2. Consider the string "2110" in base 3 ,base 4, and base 5.

3.   • Section 5.1 3, 11, 23, 25 (only for 23).

   • Section 5.2 12, 18, 24, 30, 36 (only for 18, 19) , 39

   • Section 5.3 3, 7

The geometric sum

Read example 2.4.4.

1. Find an expression for $\sum_{k=0}^{n}(2^k)$. How would this number be written in binary?

2. Find an expression for $\sum_{k=0}^{n}(10^k)$

3. Find an expression for $\sum_{k=0}^{n}(3^k)$. How would this number be written in base 3?

4. What is the decimal value of 111_b ? what is the decimal value of $1111...11_b$ (where there are k 1's)

5. What is the decimal value of 333_4? What is the decimal value of ddd_b? where $d = b - 1$