# Hibernia College Section 1 Number Systems

Number Bases

Number Bases in base 10

Number Bases in base 5

The Binary Systen

Binary Strings

1001011 = 75

binary digits

Calculating in the binary systems

Binary addition

Binary Subtraction

Binary Multiplication

Binary Division

Hexadecimal Number system

Converting decimal in other bases

Rational Numbers

Facots , Multiples and Primes

Fundamental Tehroem of Arithmetic

Representing Fractions

Decimal Fractions

Fractions in bases other than 10

Real Numbers

Irrational Numbers

Inequality Symbols

Floating Point Notation

## Real and Rational numbers

## Exam Questions

Question 1

Working in base 2 and showing all your workings, compute the following.

(10110) (111)

Express the binary number (1101.101) 2 as a decimal, showing all your workings

Express the decimal number (3599)10 in base 2.

Say which of the set the following numbers belong to. If they belong to more than one of these sets, give all the sets.

|  |  |
| --- | --- |
| B=matrix(c(2,-3,7,1,0,2),byrow=T,nrow=2)  C=matrix(c(1,-2,4,3,0,5),byrow=T,nrow=3)  A=matrix(c(1,3,-2,4),byrow=T,nrow=2)  BC = B%\*%C  CB = C%\*%B  A+BC | > A+BC  [,1] [,2]  [1,] -9 25  [2,] -1 12  > |
| > BC  [,1] [,2]  [1,] -10 22  [2,] 1 8  > | > CB  [,1] [,2] [,3]  [1,] 0 -3 3  [2,] 11 -12 34  [3,] 5 0 10  > |

**Question 10**

Say what information the first row of the matrix contains. Find the number of edges of G.

Write down the augmented matrix for the following system of equations.

x+y+2z=7

2x+y+3z =11

x-27+5z=4

Use Gaussian elimination to solve the system.