1. f(x) = (+ x ln ) () + () ()

O(+ 5x ln x) = O()

O() = O()

O() = O()

O() = O()

O() \* O() + O() \* O()

**O( \* ) = g(x)**

1. **No.**

Consider x = 6:

= , which cannot be upper bound by any constant k. Therefore is not O()

Now consider x > 6:

= 0, which shows there is an upper bound by some constant k. Therefore is in O().

However, There are infinite real numbers such that a > 6, therefore there is no smallest real number that places in O().

1. CA1016 + 4F5716:

7 + 0 = 7

5 + 1 = 6

A + F = 19 Carry the 1 to the next line

1 + C + 4 = 11

CA1016 + 4F5716 = **1196716**

1. 110112 \* 10012: (x is placeholder)

xxx11011

xx000000

x0000000

11011000

**11110011 ANSWER**

1. 621 = 82 \* 7 + 47

82 = 47 \* 1 + 35

47 = 35 \* 1 + 12

35 = 12 \* 2 + 11

12 = 11 \* 1 + 1

11 = 1 \* 11 + 0

The last nonzero remainder is 1, so by the Euclidean Algorithm, the integers **621 and 82 are relatively prime.**

1. =

=

=

Mem =

**Result = Mem +**

1. Just like multiplying a decimal number by 1010, when multiplying an octal number by 108 (810) you simply add a zero to the right side of the number like a bit-shift. In the instance of n = 7418 ,

**n \* 108 = 74108**

1. The division in this case is the opposite direction of shift of multiplication, perform the “bit-shift” when dividing with powers of 10b. The cut bit becomes the remainder. In the instance of n = 7418,

**= 74 with a remainder of 1.**

1. n = 0 : = = 3 mod(13)

n = 1 : = = 9 mod(13)

n = 2 : = = 81 mod(13)

If n is odd then : = 9 mod(13)

If n is even then : = 3 mod(13)

1. Calculating hex numbers A…A requires a geometric summation. This can be defined by:

In Hex:

= 0xA

In Decimal:

= 10

This simplifies by the Geometric Sum Formula to:

10 = 10 = **2**

1. EXTRA CREDIT:Graphical user interface, text

   Description automatically generated