Class Note

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IT-21020

Assignment on Modulo and Multiplicative Inverse

1. $-17 \bmod 23$?

$23 \mid -17 \mid -1$

$\underline{(+)\ 23}$

6

Cross verification using remainder theorem;

$-17 = 23 \times (-1) + 6$

$\Rightarrow -17 = -23 + 6$

$\Rightarrow -17 = -17$

(Proved)

2. Multiplicative inverse of -13 upon modulo 23?

$\Rightarrow$ Inverse exist if $\gcd(a, m) = 1$

Now, we can say $a.x = 1 \pmod m$

Here $a = -13$

$m = 23$

$-13x = 1 \pmod{23}$

Here, x is the multiplicative inverse. For the value of x, reminder will be one. $x = 7$ will be satisfied this. $23 \mid -91 \mid -4$

$\underline{(+)\ 92}$

1

Ans