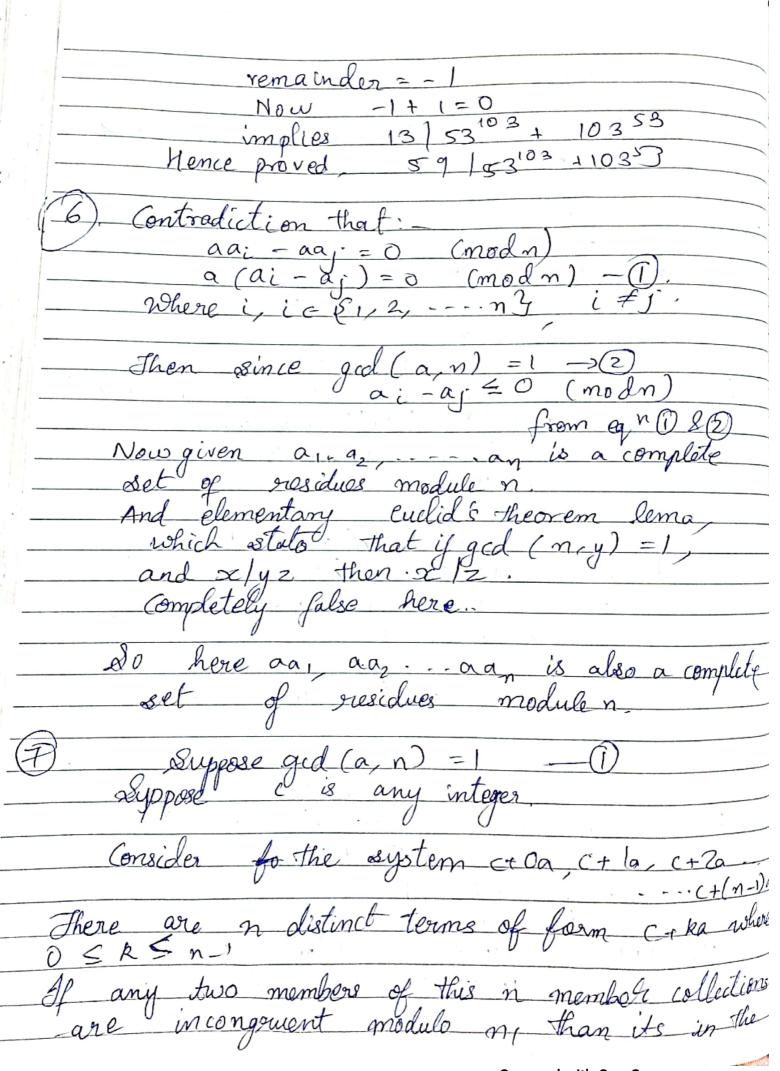
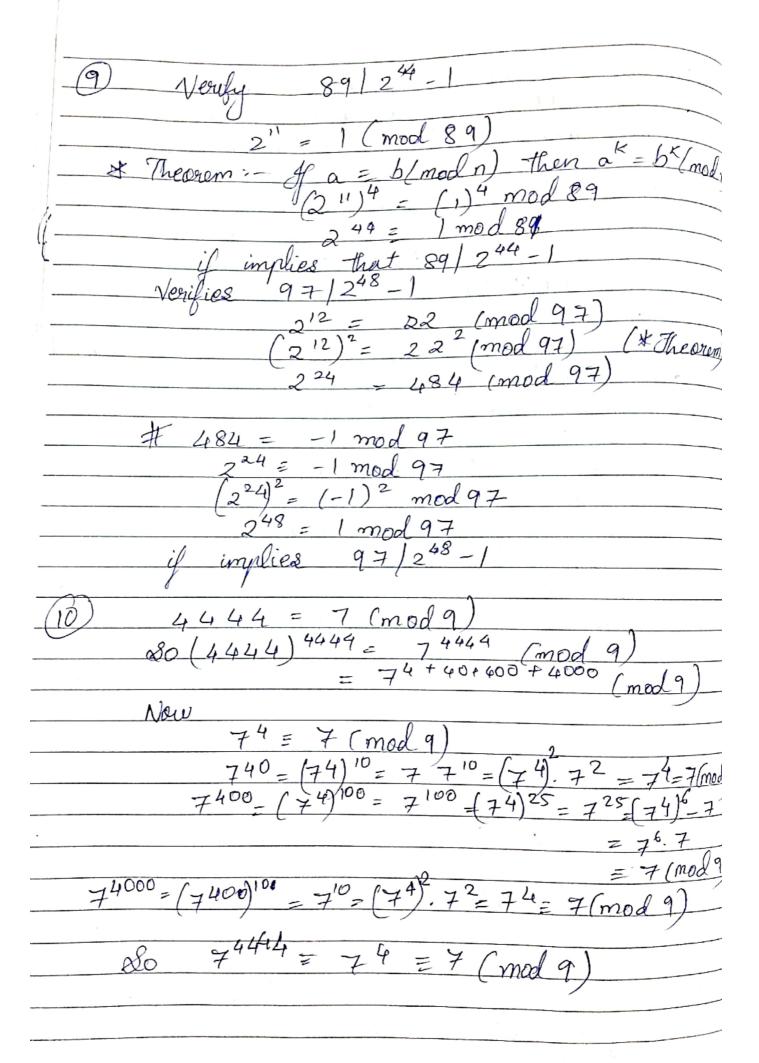
Scanned with CamScanner

1-3 = h(4)
$\frac{-2/q = h}{h $
Hence a 7 6 (mad n)
(3) Given
$\alpha = b \pmod{n}$ $\alpha = b + kn \qquad K \in I$
$- \frac{\alpha = b + k\eta}{\rho + k\eta} \frac{KE + L}{\rho + k\eta}$
Now lets assume gcd (a, n) = d and gcd(1);
Dividing ex D by d
a/d = b/d + kn/d
$\frac{a/d - kn/d = b/d}{\text{it amplies}} = \frac{b/d}{b} = \frac{b}{b} = \frac{b}{b} = \frac{b}{b}$
a complies of b = 0
Now again, $a/c = b/c + kn/c$
At implies cla which means c \le d
It implies cla which means $c \le d$ Thus $c = d \Rightarrow gcd(a,n) = gcd(b,n)$
4) 4165 is divided by 7 then remainder
Three-love: - 48 x = 6 (on 1) of K-1Kin
Therefore: - If $\alpha = b \pmod{n}$ then $a^k - b \pmod{n}$ for any +ve positive integer k.
1, 765
$\frac{(41)^{65}}{41^{65}} = (-1)^{65} \mod 7 \qquad k = 65$
Our remainder should be +ve 80
$7 - 1 = 6$ $41)^{65} = 6 \pmod{7}$
H 1) = 6 (mod 7)

```
remainder -> 6
             to prove that integer 53103 1103
                   = 2 (mad 3)
                      -1 (mod 3)
                     (modn) then ak = bk (modn)
                          mod 3
   Theorem
       Now
                     53103
                       1 cmod 13)
          remaindor =
Theorem
```



suppose ett a system module n.
distinct members of n num member family
distinct members of n number samily
- Variable Control of the Control of
Then $0 \le t \ne s \le n-1$
any continue (ta = C+Sa (mod n)
That is m (c+to) - (c+sa)
$m \left(t-s \right) a - \left(2 \right)$
Recollect the divisibility property "if ged (a,b)=1
do the then alc.
In the present cake (1) and (4) forces that
But 3 says t-s <n absurdity.<="" an="" and="" is="" n="" so="" t-s="" td=""></n>
too our there
Therefore, no two members of 2 are congruent module no since these are no members if it is complete residue system modulo no.
members of (2) are congain
modure n' some hese are n members, y it
is complete reseaux system modulo n.
For example take $a=1,b=2,k=2,m=3,j=5$ $a^{k}=b^{k} \pmod{n}$
$1^2 = 2^2 \pmod{3}$
The Trite
$k = j \pmod{n}$
$2 \equiv 5 \pmod{3}$
True.
but $a^{j} = b^{j} \pmod{n}$
$15 = 2^{5} \pmod{3}$
Lalse
So it is shown that $a^k = b^k \pmod{n}$ and $k = j \pmod{n}$ need not imply that $a^j = b^j \pmod{n}$
b = i (mod n) need not imply that al = 150.0
Mod n



Value for 11+21+31+41+....+n) is a perfect osquare. For n z 4 above series consist of 3 as last digit $n \ge 4$ $11 + 21 + 31 + \cdots n!$ is congruent to 0,1, or 4 mod 5. m=3 11+21+31=9 Perfect square m=2 11+21=3 Not possible m=1 1=1 Perfect square Only for n=1 and n=3 11+21+31+...n1 és a perfect square. (mod 503) $\frac{19^{4} = 44 \pmod{503}}{19^{16} = (19)^{4} = 44^{4} = 243 \pmod{503}}$ $\frac{19^{32} = (19^{16})^{2} = (243)^{2} = 198 \pmod{303}}{80, 19^{53} = 19 + 4 + 16 + 32}$ = 19, 194, 1916, 1932 = 19 (44) (243) (198) mod 50 3 = 406 (mod 503) am10m + a 10m-2-1----.. +a 10 +a

- it is decimal expansion of given N Here N - 176521221
176521221 is only divisible by 9 if $S = a_0 + \alpha_1 + \dots$ and divisible by 9
S = 1 + 7 + 6 + 5 + 2 + 1 + 2 + 2 + 1 = 27 $S = 27$ which is divisible by 9 20
$ \frac{9 17652 221}{7 - 40} = \frac{1}{40} = \frac{1}{$
$\frac{1-776-5+2-1+2-2+1}{5-3}$
11/7 20 11/176521221