) It is not antisymmetric, as if x=2, y=1 (ry andynx as |x-y|=1≤2 and |y-x|=152, u+x+y. R={ C1,2), C2, 1), C2,2), C1,1) he relation isn't reflexive as 3 1/3. The relation is symmetric as for every a in each In 2 and 2 ~ 1, by transitive property in 1, which is true

3 Conditions for equivalence relation.
Reflexive: XRX sany number has some amount of Symmetric: XRX sanginamos Symmetric: XRy means xandy have same number of digits so they yRX as they have same Transitive Have BEZ if XRy and yRK then XRK as Xandy have same amount of digital but so doyan dk, therefore Xand K have so amount of digits and the relationis transition The relation is anoquivalence relation and it creates a partition for each number with a different amount of digits. Hequivalence relations = #partitions partialions - I way to splititinto a grap of 3: 2/2,33

(2(3)=3 ways to split into a grap of 2 and a grapost2

- I way to put each elementate it's own grapost2

There are Sportitions, so there are 5 equivalence relations. in one equivalence class making it well defined) tais well defined. To prove, need to show for Z and if [Z,]10 = [Z,]10 then [Z,]5=[2,]5 If Conditionis tone, FKEZ 2,-2= lak and want K' EZ such that 2, -2, = 5K 21-22=502K) showing Itis equivalent to 2,-2=5ki and fe iswell defined

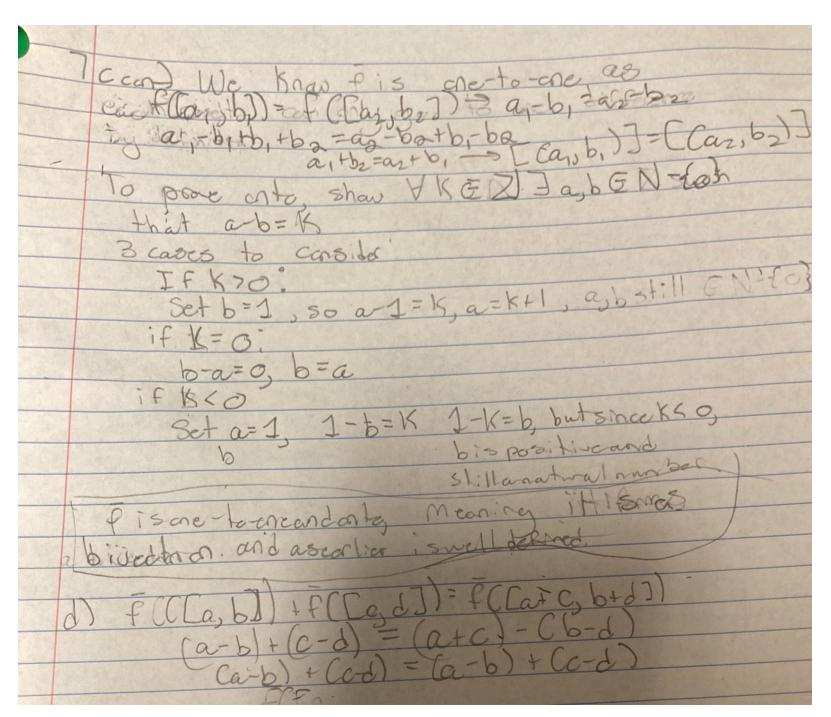
However the autputs, [3], o + [5], meaning a+2=10K+81 a=10K+6 Areaning that the solutions to the this means the lefts ide is even and the aghtside is odd so they never equal and

Reflexive (Cayb) v (Cayb) the as atb=atb. Symmetric (of Casb) ~ Cosd) then (Casb) ~ Casb) if (CGd) ~ (ab) then ctb=atd which is Preflexive Have (e,f) E(N={c) x {N-{c3}} IF Cathor (cod) and=c+6 if (co, s)~ (g+), C+f=d+e, C=d+c-f. Rounte atd=b+c as atd=b+d+c+=> a+f=b+e,
Ca,b)~Cost Thereferere. I san commulence relation. b) To show well defined, let us have [Ca, b)] = [(a', b')] and [(c, d)] = [(c', d')]

[Ca, b)] = [(a', b')] and [(c, d)] = [(c', d')]

[I fuell defined both sums give same solution.

[Let a', b', c', d' & N-{c}.] If E(a, b)]=[(a',b')] then a+b'=b+a' and for [(c,d)]=[(c',d)] then e+d'=d+c' Next, taking the sums
[(a,b)] + [(cgd)) = [(a+c,b+d)]
[(a,b)) + [(cgd)] = [(a+c,b+d)] lets add the equations from Carlier giving us at c+b'+d'=b+a'+d+o' which is our Sumwhen added together meaning it is welldefind on the cosets. 7() fC((a,b))= a-b on, artd=brg or a-b=c-d. meaning that each difference for a-b maps to a cosetand since we know the difference between anumbers can't have avalues it is well defined



Scanned with CamScanner