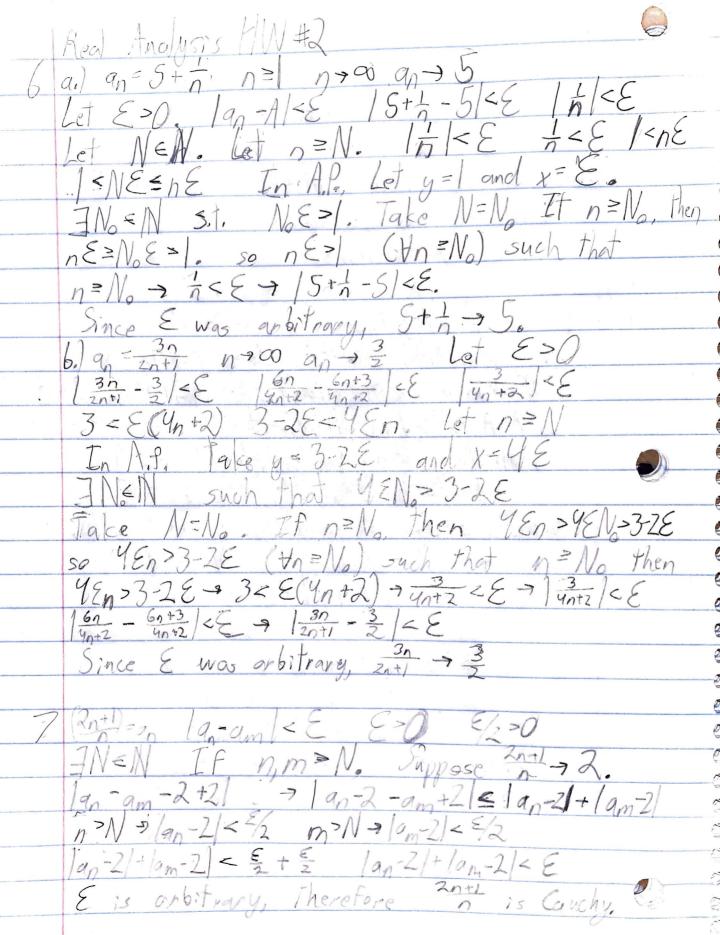
a) i. let n'igr langon let m be lambon. n, 11=1. Let M: 5max (n, m3. If 9, = bm. 1200 then the beginning of n would be after the end of m, meaning [an, bn] [am, bm] DIV. is not true, so on 56m. il) [a, 16, ] has a, = a, = a, = a, . . . . So q, is a lower bound. So sup [an] = an But if an = suplan] THU il isn't sup, so sup[an] = an. And an = bm so suplant bom. an is an upper bound bom is also an upper bound, Since an sbm, 6m is the highest upper bound. Since on is the highest a can go. So suplan ] = 6m. iii) If c=supland, c=an for all nEN because a 15 a supremum. And I = bon for m= N. This means it is between each [anbal pair because for every by, an = by so ches To the same of the in every interval. B.) For any N, there is a cooresponding Landa. If this function starts at n=17 [ai, bp] being the largest interval. Let us exclude of from nol. Then let us have on n=2 st. [a, b, ] exclude r. We continue This to an excluding on numbers, anders not include c which is a real number. The list exclude all ry so it not excluding a means it does not exclude all ry thus making to uncountable because f: No R is not surjective going through oil

KA HW #Z 2 3/n 7 A Then lan-Al < E an = lan A = |Al 50 lan-A/≤ |lan/-IAI/E | |lan/-IAI/-E E is orbitrary here, so lapl-7/Al 3 Lf xn > X - yn > Y / = yn - X = Y ant Light anson so LEC CAC forthe enst be less than L because it needs to be more than L and Vise versa so Comust be equal to L, so Cot 41) an 70 /an/- E an E let an - E [A] = | q | VIAI = Vai 3.) For n=N2, 19-A1< 3 € 4) N = max EN, N3. 190-A1= 3 = JQ + JA > V2 + JA  $|\nabla a_{n}|^{\frac{1}{2}} |\nabla A|^{\frac{3A}{2}} |\nabla a_{n}|^{\frac{1}{2}} |\nabla a_{n$ Then we just have & and Na, -Al & E and E is arbitropy so

#8 and #5 -A > 8 1an-A/28 13 Jake E=IAI E < / sin (201/11) -A 5 So an E Stan-Al spisis divergent sequence where on converges would 1a, -A/t/a, A/t/a, -A/... Eisanbatary, so on



(-1)" this diverges because it alternotes between I and this diverges because it alternates HnEN (anton) converges because (-1) 1+(-1) 1+1 =0 it converges to U. = 1-5/12 /1900 SCRO I NON S CO Q. CORD - Q. n +00 (14-0-2)00=(2-2)00=0.00 · 00 = ()

1