$(1/b)(b)x = (1/b)a$. $x = a/b$. WE ARE ASSUMED THAT THE NUMBER $1/b$ EXISTS AND HENCE WE CAN MULTIPLY BY IT. HENCE, EXCEPT FOR DIVISION BY ZERO, THE SET OF RATIONAL NUMBERS IS CLOSED UNDER THE OPERATION OF DIVISION.

71. THE RATIONAL NUMBERS AS SECTIONS OR CUTS.

THE MANNER IN WICH WE NOW DEFINE RATIONAL NUMBERS WILL SEEM FARFETCHED AND QUITE ARTIFICIAL. THE FOLLOWING DEFINITION IS VALID IF THE SET IS LINEARLY ORDERED AND DENSE. FOR EXAMPLE: THE RATIONAL 1/3 WILL BE DEFINED. FOR WICH THERE'S FOUR SEQUENCES

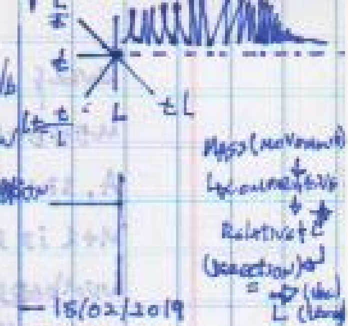
A 99/300; 999/3,000; 9999/30,000; 99999/300000....
B 102/300; 1002/3000; 10002/30000; 100002/300,000...
C 0.33; 0.333; 0.3333; 0.33333, ...
D 0.34; 0.334; 0.3334; 0.33334 ...

IN EACH SEQUENCE THE NUMBER OF MEMBERS IS ENDLESS. A AND B ARE WRITTEN IN RATIONAL FRACTIONS; C AND D IN AN EQUIVALENT DECIMAL REPRESENTATION. THE METHOD OF FORMATION OF EACH SUCCESSIVE MEMBER IS CLEARLY SHOWN. FOR EXAMPLE IN A THE NUMERATOR OF THE GENERAL MEMBER, a_n, CONSISTS OF (N+1) DIGITS, EACH BEING 9. THE DENOMINATOR CONSISTS OF 3 FOLLOWED BY (N+1) ZEROS. IF N=4, THE MEMBER IS THE NUMBER 99999/300000.

EACH MEMBER OF A, AFTER THE FIRST MEMBER, IS GREATER IN MAGNITUDE THAN THE PRECEEDING MEMBER. THE DECIMAL REPRESENTATION, C AND D, SHOW THIS CLEARLY. ANY MEMBER OF A IS LESS THAN 1/3. ANY MEMBER OF CLASS B IS GREATER THAN 1/3. THIS IS READILY SEEN IF WE SETUP THE FOLLOWING SEQUENCES, A' B'. FOR CONVENIENCE, LET THE MEMBERS OF B BE $b_1, b_2, b_3, \ldots$, WITH GENERAL TERM b_m.

A' $1/3 - a_1$; $1/3 - a_2$; $1/3 - a_n$; ...
B' $b_1 - 1/3$; $b_2 - 1/3$; $b_3 - 1/3$; ...

FOR ANY GIVEN POSITIVE RATIONAL NUMBER δ, THE POSITIVE NUMBERS, $1/3 - a_n$ AND $b_m - 1/3$, CAN BE MADE LESS THAN δ BY CHOSING AN N OR M SUFFICIENTLY LARGE. THEN IS POSSIBLE TO APPROXIMATE TO 1/3 AS CLOSE AS DESIRED. FOR EXAMPLE, LET $\delta = 1/10^6$, THE DIFFERENCE BETWEEN 1/3 AND a_n MUST BE LESS THAN 0.000001. IF N=4, WE HAVE $(1/3 - 999999/3000000) > 1/10^6$. IF M=5, $(1000002/3000000 - 1/3) < 1/10^6$. SINCE THE DIFFERENCE BETWEEN 1/3 AND b_m CANNOT BE ZERO WITH EXCEPTION OF 1/3 THE RATIONAL NUMBERS ARE THUS SEPARATED IN TWO CLASSES, A, EVERY MEMBER OF WICH IS LESS THAN 1/3. BY OUR CLASS SELECTION, WE THEREFORE ENSURE THAT

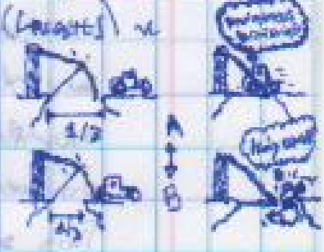


MASS (MOVEMENT) ↓ GEOMETRIC ↓ RELATIVE C (DIRECTION) $= \frac{d\,(dis)}{L\,(time)}$

— 15/02/2019

FOR EXERCISE → 71

TODAY I SHALL NOTE A BIT MORE HERE, ESPECIALLY BECAUSE OF MY CHANGING FOR WRITING IT DOWN AS IT MUST BE TOLD, BEING ERASED AS I WAS COPYING THE FIRST PARAGRAPH OF SECTION 71. I COPY IN ORDER TO TRAIN COPYING SKILLS AND THE CORRESPONDED FIELD, AS WELL TO BETTER UNDERSTAND THE BOOK, BEING CAPABLE TO TAKE FURTHER NOTES. I HAVE MODIFIED VERY LITTLE TILL NOW. FROM HERE ON, MY SEMESTER BEGINS AGAIN, SO, I SHALL JUST GO ON. HERE TO DO ALRIGHT (LAUGHS)



δ δ δ δ 6 6 ALPHA