EXPERIMENTAL EMAIL PROFESSIONAL DEVELOPMENT

on

LOGARITHMS

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QUESTIONS ASKED

For May 10: Questions that are repeated were asked that many times.

History

Who was Napier? What big problem was he trying to solve?

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[W]here does the word logarithm come from?

Napier first wrote about logarithms as logs of sines, as sine was a measurement of length....how do you make a table of log of sines? I have read a brief description about two points travelling along parallel lines and do not understand. I do understand very well how their predecessors developed tables of sines and cosines....now I want to understand how to make a table of log of sines. (around 1614)

Henry Briggs further developed Napier's Log of Sines to logs of base 10. the Gunter (1620) further developed the tables to logs of sines and logs of tangents for each minute of the quadrant (8-figured tables) to ease the burden of calculating your position at sea. how was this calculated using the log of sines and log of tangents and the quadrant tool?

Where did natural logarithms come from or the value of e?

Computation and History of

How does one find logarithms for not so nice numbers? Like is there a power to raise 10 to get 2? How did Napier figure out all of them?!?!? How much paper did he have to use?

What about intermediate values (x not a simple power of b): how do we find approximations and refine them? (this leads to logarithmic number lines and "filling them out")

Does anyone still use tables to determine logarithm values?

Use of Logarithms

Okay, I get it. Why should I care about logarithms?

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Connection to Powers/Exponents

What did I already need to know before doing this?

I don't get it. What are powers?

If logarithms are just powers, do they have something to do with exponents? Isn't that what powers mean?

My first thought to your initial question, "what is a logarithm," was simply it's the inverse to an exponential! … How would you connect this to students understanding of exponentials, in particular a function f(x)=b^x, the idea of an operation or function machine, its inverse or how you "undo" the operation.

What is it that I can do with logs that cannot do with exponents, if logs are just powers (or exponents)?

Logarithmic functions

What kind of interesting investigations are there related to how slowly a logarithmic function grows?

[How do you think of logarithms] as functions in their own right as opposed to just inverses of the exponentials?

What kind of interesting investigations are there related to how slowly a logarithmic function grows?

Teaching

How can we teach about logarithms without making it seem like they are just a bunch of rules?

Can we just rename logs?

Can we develop the rules for logarithms in an intuitive way, using this simplified notion of a logarithm as a power?

Miscellaneous

How exactly are logistics related to logs and how can I connect them in the classroom? <Clarification: By "logistics" we mean "logistic growth.">

Do you have a favorite logarithm?

How are logarithms and logarithmic graph paper related? How does the graph paper impact/support graphs of logarithmic functions – if at all?

For May 20:

For: "Who was Napier? What problem was he trying to solve?"

How do you multiply the numbers in your example (3.17 x 2.98 x 3.02 x 2.47 x 3.28..) using logarithms (base ten like Briggs would have used)?

I still do not understand how Napier created the first logs as *Log of Sines* when Sine was a length along one of those parallel lines that the two particles are travelling down (as you mentioned in your response). Are Log of Sines and Log of Tangents meaning a base of Sines and a base of tangent lengths? If so....I still do not understand how he created this from the two parallel line and travelling particle visual. (Is the math too difficult for this forum?) I'm just quite curious is all.

Can we 'backwards explain' the method to make more sense of it (or to help it make sense when explaining it to students?

Was Napier's method really that convoluted? How would you express it in modern notation?

In particular, how did he compute his tables (where we just hit the magic "log" button)?

What's this got to do with Napier's Bones?

For: "Why do we care about Logarithms?"

In the 1600's, I'm assuming equations that they were working with involved exponents? Would that be a correct assumption? Do you have a real example of what a person may have needed to calculate where the reference to the Brigg's Base 10 Log Tables would have been useful? That would also be really interesting to me!

Are there any good examples of breakthroughs that came directly from this?

Can't we just solve that equation using graphs?

Why would I want to solve a weird equation such as 7^x = 5^(x+2)? Aren't these just the type of complicated equations only math teachers can come up with to torture their students?

There seems to be a triplet a^b=c, LOG_a(c)=b, b-√(c)=a. Where and how does the last one join in?