in search of intelligent life

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It is highly unlikely that other technological civilizations within our part of the galaxy are only appr. 100 years advanced past the crude invention of radio (for example). After all, on an astronomical scale, 100 years is barely "a tick of the clock" (so to speak). Probabilistically, where technological civilizations exist, those 10,000-100,000 years advanced (at least) would be much more commonplace. Relatively speaking, it is difficult to imagine a technological civilization more primitive than our own that meets the minimum qualification as a technological civilization.

A bored adventurer from a highly-advanced alien civilization (named Mork) decides to risk making contact with the dangerous aborigines of Earth and if he survives, make a report. So, he studies technical English, lands his spacecraft on the White House lawn and gets out. After waiting a while, he is greeted by the director of the National Science Foundation (named Mindy).

Based upon the primitive examples of technology (electronic and mechanical) that are visible around him, Mork is optimistic that some knowledge and mastery of basic, applied mathematics must exist.

During his brief visit, his sole mission is to assess the level and quality of mathematical understanding that the human race possesses in order to expediently grade their intelligence (since it is the most important, predictive indicator of their likely rate of future, technological progress).

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The conversation begins …

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Mork: Hello.
I come in peace.
Please don't kill me?

What is <u>the</u> square root of +1?

Mindy: Hello.
Thank you for not destroying our planet.
Welcome to Earth!

There are actually <u>two</u> square roots of +1 …
+1 & −1.

[Mork momentarily lapses into a mild state of shock and disbelief.
Then, Mork regains his composure.]

Mork: Really? I understand how you got the answer +1 and I agree that answer is correct but how did you also get the answer −1?

Mindy: Well …

$$-1 \ \times \ -1 \ = \ +1$$

<u>**and**</u>

$$+1 \ \times \ +1 \ = \ +1$$
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Mork: Really? Wait. What can you actually do with a square root of a positive number that is negative, the −1 answer, in applied mathematics?

Mindy: We just arbitrarily throw away the −1 answer since I agree, it is obviously useless. Besides, we have a square root of a positive number that is positive, the +1 answer, which can be used in applied mathematics.

Mork: Yes but how can you justify arbitrarily throwing away one of your two answers? Mathematics is supposed to be the most serious science.

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Mindy: I don't know exactly how. Frankly, I don't even care. Ask one of our expert mathematicians the details. Of course, this person will not care either but will know the reason. Generally, noone really cares at all although we all must lie to the public and promise we care a lot.

The point is we are such cleverly-manipulative educators and scientists, we can always invent any needed flimsy, theoretical rationalization to arbitrarily justify anything we really want to do or really want <u>not</u> to do. It completely satisfies the lax standards we half-ass apply to ourselves and our students don't dare argue.

After all, we are the only people on the planet whose opinions matter at all. We are the elites and the official experts. We are the academic authorities who have power in this manner worldwide in an actual totalitarian sense, even into and including democratic nations. We tell all of the world's people what the standards are. We tell all of the world's people what is correct and incorrect. Noone dares to tell us, instead, what the standards should be or what is correct and incorrect, regardless of the strength of their mathematical arguments … precariously and humorously assuming that any of us ever waste any of our time reading such insulting things.

Mork: Are those your highest ideals of good science, good education, fair academic practices and ethics?

Mindy: Yes.

Mork: I understand but how does your worldwide, totalitarian, elitist-ruled, no-dissent system of mathematics ever self-correct when mistakes are made in establishing standards?

Mindy: It doesn't ever self-correct but the beautiful thing about our system is that since it works perfectly, it doesn't ever need to self-correct. So, there isn't any problem at all.

You see, all of us throughout the entire history of mathematics have always been such miraculous super-genii that we have never made any mistakes at all in thousands of years of arbitrarily creating new branches of mathematics, accommodating new works and establishing standards.

Mork: Really? How do you know that for certain?
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Mindy: Just examine the situation logically. Then, the right conclusion is inescapable.

If we had ever made any mistakes in establishing standards, then all of the many miraculous super-genii alive today within our worldwide army of mathematicians would have surely detected them, pointed them out to others and corrected them. Therefore, the realistic odds of any mistakes whatsoever currently existing anywhere within modern mathematics are zilch.

Trust us!

Mork: It is difficult for me to trust you when you contradict yourself logically. You previously stated the system does not have the power to self-correct. Then, you stated that if any mistakes were detected by professional mathematicians, they could and would be corrected. How?

Mindy: Hey, alien smart ass! If a majority of us elites detected a mistake and wanted to correct it, we have the power to do so even if it is unprecedented.

Mork: Fine but what if only a minority of the elites detected a mistake and wanted to correct it with the majority of the elites being against doing so, indifferent or uninformed about the matter.

Mindy: Then nothing would happen.

Mork: That sounds like a serious problem to me.

Mindy: No. That isn't a problem at all. As I said before, I have faith that a majority of our miraculous super-genii would detect any real mistake and vigilantly correct it. Hypothetically, I guess it is possible a minority of our miraculous super-genii could be mistaken in thinking there was a mistake. It doesn't matter, though, since that has never actually happened.

Mork: That isn't a realistic expectation. Mathematicians are separated into too many specializations for a majority to be aware of any specific mistake.

Mindy: Like I said, we don't make any mistakes and never have. So, even <u>if</u> your point is logical, it is worthless in practice.

Mork: Every person and institution in the galaxy presently makes mistakes.

Mindy: Except us!

Mork: Really? [He resumes his point despite the loud interruption.]
This is even moreso true in the ancient past and under primitive conditions like existed until very recent centuries on Earth. Therefore, having and allowing no administrative mechanisms to exist for the correction of mistakes can be disastrous to the future development of an enterprise such as mathematics.

Mindy: Not for us!

Mork: Really? Then, what is the square root of –1?

Mindy: In the set of real numbers, there is no square root of –1.

Mork: There must be a square root of –1!

Mindy: Give me time to explain! There is a square root of –1. It just isn't a real number, in this case.

Mork: What else can there possibly be beyond real numbers?

Mindy: Interesting! Obviously, our mathematicians know a Hell of a lot more than your alien mathematicians. Hey! That is a very nice spaceship you are flying but your alien mathematicians are all dumbasses compared to ours.

There is the unit imaginary number, the complex number system and theoretically, an infinite number of hypercomplex number systems.

Mork: Really? All we have ever needed in 50,000 years of scientific history to do arithmetic and algebra is real numbers. Please give a straight answer? What number multiplied by itself equals –1?

Mindy: The unit imaginary number "i".

$$i \ x \ i \ = \ -1$$
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Mork: What is "i", though? Define it.

Mindy: I just gave you the only definition of "i" that exists. It simply is the number multiplied by itself that somehow, inexplicably equals –1.
Of course, it cannot be a real number since I have already explained how multiplication with exclusively positive or negative factors works.
It is just "the unit imaginary number".

Mork: "Imaginary" as in not real at all?

Mindy: No. Now, don't be sarcastic. The unit imaginary number is serious stuff- mathematical reality to us. "Imaginary" is just the arbitrary name we gave it that should not be taken literally.

Mork: Every number that exists except zero must be either positive or negative.

Mindy: Again, that just proves how astonishingly little you aliens know about arithmetic. How can you be so dumb and have any idea how to fly your spaceship?

No. The unit imaginary number is neither positive nor negative.
It is magically beyond positive or negative. Ask one of our expert mathematicians the details.

Mork: Well, did you arbitrarily invent more than two signs of numbers- positive and negative- to somehow solve for the square root of –1 or not?

Mindy: Of course not. We all know and agree there are only two signs of numbers- positive and negative. It is just that classifying numbers as either positive or negative only goes as far as the real numbers.

Mork: Well, you are approximately right but for all of the wrong reasons.

Mindy: What?

Mork: Nevermind. Then are you certain that your so-called "unit imaginary number" isn't actually, perhaps in an unrecognized manner, just –1
(as a negative real number) operating under different rules of multiplication like our alien civilization uses whereby two negative factors multiplied equal a negative product?

Mindy: Yes. It definitely is not that.

Mork: Then what is it? How do you know for sure? After all,
it is isomorphic to and indistinguishable in its product from what
I described.

Mindy: I don't know exactly what it is. I just definitely know what it is not. Don't argue with me! I have already ascertained that Earth mathematicians are much smarter and more knowledgeable in numerous ways than any of you ordinary aliens can possibly be at math.

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Mork: You did not convince me. You did not even make a mathematical or logical argument. Do not tell me what I cannot do. I am going to argue with you, anyway, because you need to understand:

If you state …

$$n \times n \neq -1$$
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- then you should not just substitute the letter "i" for "n" to mysteriously solve the equation.

$$i \times i = -1$$
_____

If you disregard my advice and do it anyway, then essentially all you have accomplished is to cheat to expediently and sloppily solve the problem one step further back than necessary with the unit imaginary number after and due to failing to solve the problem where you should within the set of real numbers. This will overcomplicate and cripple your entire system of mathematics dreadfully.

Mindy: I wish you had a clue what you are talking about. Our system of mathematics works fine. Frankly, I can clearly see your alien system of mathematics is so badly erred in its fundamentals of arithmetic and consequently, primitive to such an extreme that it worries me. You alien mathematicians are not even aware of half of the phenomena in arithmetic and algebra that we Earth mathematicians are brilliant experts upon.

Mork: That is because our alien mathematicians learned, for the most part, to correctly distinguish between reality and fiction many tens of millennia ago. By the way, pure mathematics must not be synonymous with pure bullshit, just using math symbols to do it. We alien mathematicians as you call us in a derogatory way only work on what is to the best of our knowledge real yet we also have pure mathematics as well as applied mathematics. Ultimately, that is what makes the technology to build devices like my interstellar spaceship possible.

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Now, correctly distinguishing between reality and fiction remains extremely difficult. It has been described as a neverending war for rationality that every individual alien mathematician and every generation must fight and make progress toward winning. Nevertheless, it is our prime directive that all of our alien mathematicians, regardless of their specialization, continuously work hardest on as it has been for nearly 50,000 years. We put ourselves through this technical and conceptual Hell of endless, rigorous foundational and systemwide re-examinations because it is extremely important and its importance extends well past mathematics.

Mathematics is the most important thing in our civilization. Mathematics is the universal language running throughout all sciences and technologies. Technologies are what keep our "beings" from suffering in the wilderness like cavemen.

You mathematicians on Earth are either oblivious to the concept or too lazy to care.

Mindy: You came all of this way just to wrongly insult us? Listen, I am an extremely good poker player. I can tell when people are bluffing. What you did not count on is that I can even tell when an ugly alien creature is bluffing. Nice speech but I know what is going on inside your mind?

By answering your questions, I inadvertently bragged about our Earthly achievements in mathematics and I made you feel inadequate and stupid. So, now you are lying like Hell about the stupendous levels of mathematics and technology prevalent to your alien civilization while thinking I have no way of seeing any evidence to the contrary. Frankly, I am amazed that "tin can" you are flying ever made it to Earth safely.

Mork: Can't you notice that your system of arithmetic is imbalanced and asymmetrical? After all, you have two real number, square roots of +1 yet zero real number, square roots of −1. In our alien system of arithmetic, we have one real number square root of +1 and one real number square root of −1 and they are +1 & −1, respectively.

Mindy: No. It seems perfectly logical to me. It is not broken. Therefore, it does not need to be fixed. Let me make it clear to you: On Earth, we don't really give a damned about balance, symmetry, consistency, conciseness, neatness or conceptual clarity in mathematics. You have some sort of pointless neat freak or obsessive-compulsive disorder about mathematics that is annoying. Good luck in overcoming your many psychological problems, sincerely. No wonder you are incapable of mustering the intellect to understand or appreciate our system of mathematics.

Besides, that is what all of our textbooks worldwide say and all of our smartest mathematicians agree. Our mathematicians are not being arrogant when they claim to be the smartest people on our planet. They are just being truthful. In my studied opinion, I agree and I believe them. Apparently, they would be the smartest people on your planet, too. What do you think?

Mork: I think it is time for me to leave.

Mindy: Don't you want to talk with one of our expert mathematicians and learn a lot more before you leave?

Mork: No, thank you. I have heard enough.

Mindy: Well, you aren't going to learn much if you are in too big of a hurry.

Mork: I am not in a hurry at all. It took me 15 boring years to get here. It will take me 15 boring years to get back home.

Mindy: Your loss! Suit yourself. Although you are insufferably stupid, we don't have many visitors from outside our solar system. When will we see you again?

Mork: You won't … unless I return to destroy your planet.
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Author's note: I envy Mork because he had the option to leave this planet for a more advanced civilization.
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Mork's report

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I guess I am fortunate that the Earth people did not kill me and barbeque me considering how primitive, arrogant, prejudice and stupid-to-the-scary-extreme they are.

The conversation on mathematics did not and could not progress beyond basic arithmetic where they are hopelessly incompetent, irrational, closed-minded and self-justified. In fact, I believe my previous remark is inadequate or not emphatic enough to convey how astonishingly bad the current condition of mathematics on Earth is.

Apparently, their best mathematicians do <u>not</u> know the correct answer to:

$$-1 \; x \; -1 \; = \; n$$
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I hope I did not cause you to fall out of your chair!

Anyway, they are certain the correct answer is "+1" instead of "–1" (obviously).

I cannot easily express how frustrating and insulting my brief conversation with the science official on Earth was. Furthermore, I was surrounded by groups of people who were pointing machine guns at me throughout my entire time outside my spaceship. Still, I take full responsibility and apologize for spending inadequate time there, esp. since I wasted 30 years just traveling to and from their solar system.

Needless to say, their system of arithmetic and algebra is messed-up as badly as you probably cannot imagine if you are sane or educated yet in a bizarre way, they confidently and stubbornly believe that it has attained a condition that is miraculously inerrant and perfect … unearned.

[Yes, I am speaking of the same ideal, perfect condition our "alien" mathematicians have relentlessly worked hard to achieve for appr. 50,000 years which remains partially out-of-reach and probably will forever to some extent.]

They exercise no self-discipline in practicing the scientific method, make little successful effort to distinguish between mathematical reality and fiction and have no understanding or respect for the importance of symmetry and its guiding principles.

Apparently, their systems of knowledge throughout some natural sciences are nearly as corrupt, stagnant and unjust as their shockingly unenlightened political, legal, economic and social systems. This situation is not likely to change for the better in the foreseeable future.

Although it would be absolutely no loss to the galactic civilization and culture, I do not seriously recommend or see any point to destroying their pathetic, powerless planet. So, please do not take any military action based upon what I sarcastically said to the Earth woman in parting? Wait at least 500 years to see if they are making any significant progress. Meantime, my travel advisory is don't go there. I give it a one-star rating (on a scale of zero to five stars) only because they did not harm or kill me.

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