MATHEMATICS

Is there any difference in mathematical notations between French and English?

Asked 7 years, 3 months ago Modified 1 year, 11 months ago Viewed 6k times

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I studied Mathematics mainly in French and now I am going to write research articles in English. I would like to know if there are some important differences in **mathematical notations between French and English**.

For instance, I noticed that the **decimal mark** in **English is a dot** (.) whereas in **French it is a comma** (,).

notation mathematical-french

Share Cite Edit Follow Flag edited Dec 8, 2015 at 17:48

asked Dec 8, 2015 at 17:20

abdeaitali
142 1 10

Apparently, the English exclude 0 from $\mathbb{N}$, and do not distinguish between positive/negative and strictly positive/negative. They also use a matrix-like notation for binomial coefficients. – Lucian Dec 8, 2015 at 18:24

1 @Lucian: (I am at a UK university) While excluding 0 from $\mathbb{N}$ appears to be the preference at my uni, I'm not convinced it's a national thing. I think in my specific case it's more to do with the prevalence of number theory and the lack of set theory. I don't know anyone who chooses not to distinguish between positive and non-negative - I would expect the distinction to be made clear. – Will R Nov 21, 2016 at 19:59

I can't post an answer right now, but one distinction is in the construction of Young tableaux. See the linked to Wikipedia article for info on the distinction between French and English notations. Of course, this may not be relevant to your work, but it is a difference between the two. – Will R Nov 21, 2016 at 20:03

1 In French, zero is positive (and negative). In English, zero isn't positive (nor negative). – Geoffrey De Smet Oct 23, 2018 at 9:00

4 Answers

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Note: these are general differences; sometimes a french author might use an English notation for any reason whatsoever.

This list obviously does not apply when a French mathematician writes something in English, in which case they will use English conventions.

Numbers

The decimal separator in French is the comma ,. The thousands separator in French is the space.

$$\underset{\text{English}}{1{,}345.67} = \underset{\text{French}}{1\ 345{,}67}$$

Tuples, vectors, coordinates

The semi-colon ; is sometimes used in tuple-like structures instead of the comma , in cases where the comma could be mistaken for the decimal separator (or because of personal preference).

$$\underset{\text{English}}{(1, 2, 3)} = \underset{\text{French}}{(1; 2; 3)}$$

Intervals

An open interval is denoted with an open square bracket, instead of a parenthesis:

$$\underset{\text{English}}{[a, +\infty)} = \underset{\text{French}}{[a, +\infty[}$$

$$\underset{\text{English}}{(-\infty, +\infty)} = \underset{\text{French}}{]-\infty, +\infty[}$$

Integer intervals

I'm not sure if this notation is used in English mathematics, but in any case the French one seems fairly common in French literature. The English notation is completely understood for a French person.

$$\underset{\text{English}}{\{3, \dots, 42\}} = \underset{\text{French}}{[\![3, 42]\!]}$$

These brackets are basically to [ ] *what* $\mathbb{N}$ *is to* N.

In LaTeX you would use `\llbracket` *and* `\rrbracket` *from package* `stmaryrd` *; this is not available in MathJax.*

Cross product (vector product)

Cross product (called *"produit vectoriel"* (vector product) in French) uses the wedge symbol $\wedge$ instead of the typical mutliplication cross symbol $\times$.

$$\underbrace{\vec{a} \times \vec{b}}_{\text{English}} = \underbrace{\vec{a} \wedge \vec{b}}_{\text{French}}$$

Scalar triple product (mixed product)

This one is anecdotal. There seems to be multiple notations used for that in France, including the English one.

$$\underbrace{[\vec{a}, \vec{b}, \vec{c}]}_{\text{English}} = \underbrace{(\!(\vec{a}, \vec{b}, \vec{c})\!)}_{\text{French}}$$

Sets

In French mathematics, 0 is both positive and negative. Therefore, we always have:

$$\underbrace{\mathbb{N}}_{\text{French}} = \underbrace{\mathbb{Z}_+}_{\text{French}} = \underbrace{[0, +\infty)}_{\text{English}}$$

To omit the 0 in these sets, one adds a superscript star $*$:

$$\underbrace{\mathbb{N}}_{\text{English}} = \underbrace{\mathbb{N}^*}_{\text{French}}$$

Function names

Both English and traditional French names are used in French mathematics since they don't lead to any confusions.

$$\underbrace{cosh}_{\text{English}} = \underbrace{ch}_{\text{French}}$$

$$\underbrace{sinh}_{\text{English}} = \underbrace{sh}_{\text{French}}$$

$$\underbrace{tanh}_{\text{English}} = \underbrace{th}_{\text{French}}$$

$$\underbrace{arcosh}_{\text{English}} = \underbrace{argch}_{\text{French}}$$

$$\underbrace{arsinh}_{\text{English}} = \underbrace{argsh}_{\text{French}}$$

$$\underbrace{artanh}_{\text{English}} = \underbrace{argth}_{\text{French}}$$

Transposition

Transposition

Traditionally, the French notation for transposition is a preceeding superscript t, instead of a following superscript $\intercal$. The English notation is sometimes used, notably in Computer Science circles.

$$\underset{\text{English}}{M^{\intercal}} = \underset{\text{French}}{{}^{t}M}$$

Note that one has to remove the extra space after the preceeding superscript in the French notation, using `\!` *in LaTeX/MathJax.*

Integral evaluation

$$\int_a^b x^2 \, \mathrm{d}x = \underset{\text{English}}{\tfrac{1}{3}x^3\Big|_a^b} = \underset{\text{French}}{\left[\tfrac{1}{3}x^3\right]_a^b}$$

The English notation is sometimes used.

Binomial coefficient (n choose k)

$$\underset{\text{English}}{\binom{n}{k}} = \underset{\text{French}}{C_n^k}$$

The C stands for "combinaison" (combination).

Note that the k is on top and the n on the bottom in the French notation.

The English notation is pretty much standard in French mathematics nowadays.

Share Cite Edit Follow Flag edited Feb 9, 2017 at 20:40 answered Feb 9, 2017 at 15:28

Fatalize
286 2 7

In French, is $a \wedge b$ understood as a bi-vector (as the wedge product in exterior algebra), or a vector (as in the cross product)? These are, of course, equivalent under isomorphism, but which one is it? – Nick Alger Feb 9, 2017 at 20:52

@NickAlger I'm not an expert on that subject but unless in an explicit context where bi-vectors are relevant, I would say it will be understood as a vector. – Fatalize Feb 9, 2017 at 20:57

1 thanks for this nice list! I think ${}^{t}M$ is used by some English speakers in algebraic geometry, but this may be because of the heavy French influence on that subject – hunter Mar 4, 2017 at 23:09

Fatalize, what about the dot product? On Wikipedia I saw they use a weird asterix symbol. Not sure though. – Jek Denys Jul 7, 2020 at 13:35

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I think you know this one already, the open/closed intervals:

$$\underset{\text{french}}{]a,b]} = \underset{\text{english}}{(a,b]} \text{ e.t.c.}$$

Then as far as I know *Corps* (could be translated as *Field*) in French is usually not necessarily commutative, while the english expression *Field* always requires commutativity.

These are just two things I noticed, but I think that is already all I know, neither french nor english is my native language.

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answered Dec 8, 2015 at 17:22

flawr
16.1k 4 38 62

I think the French notation for intervals is better, as an English open interval is (a,b), but (a,b) is also used for ordered pair. (My native language is English.) – DanielWainfleet Feb 9, 2017 at 16:20

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In traditional French typography for maths, uppercase letters and Greek letters should be upright.

Some functions names were different `tg` and `cotg` for `tan` and `cot`, `sh`, `ch` and `th` for `sinh`, `cosh` and `tanh`. The inverse trigonometric functions had an initial capital (`Arcsin`, instead of `arcsin`). The inverse hyperbolic functions are (were?) denoted `argsh`, `argch`, `argth`, instead of `arsinh`, `arcosh`, `artanh`.

In linear algebra, the transpose of a matrix is usually denoted with a prescript roman t: ${}^{\mathrm{t}}A$.

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answered Dec 8, 2015 at 17:35

Bernard
173k 10 66 165

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I have seen Vect(u_1, u_2, u_3) used to denote a linear subspace of V generated by the vectors $u_1, u_2, u_3 \in V$, which I would normally write as $\langle u_1, u_2, u_3 \rangle$.

I don't know how common Vect is used but here are some examples where I've seen it:

- https://math.unice.fr/~ah/ens/cours/alg10/sousesp.pdf
- https://fr.wikipedia.org/w/index.php?title=Sous-espace_vectoriel_engendr%C3%A9&oldid=178218559

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answered Apr 19, 2021 at 4:47

eugenhu
123 6