

Rutgers Learning Centers

At Camden Campus

MATH: FOREIGN LANGUAGE

Calculus

Like a foreign language, mathematics has unfamiliar vocabulary words or terms. These are put into sentences called *expressions* or *equations*. Understanding and solving a mathematics equation is the same as understanding a sentence in a foreign language. When the correct term is used, the meaning of the mathematical sentence is conveyed clearly and precisely. The following mathematical terms and their use may help you speak calculus fluently, like a native!

dx integral sign

Two uses:

1) integral

$$\int f(x)dx$$

English: When **dx** follows the expression, you are saying:

- I am finished with that expression
- the operation is complete
- "done exit" (dx for short!)

Math: The integral of $f(x)$ with respect to x .

2) differential

$$f'(x)dx$$

English: When **dx** follows the derivative, you are saying:

- the expression is differential.

Without **dx**, you are saying:

- the expression is a derivative.

Math: **dx** changes a derivative into a differential.

Without dx, the reader can't tell if you're finished with an operation, or if the expression is a differential or a derivative.

() parentheses

English: By using parentheses around an expression, you are saying:

- This is a road sign
- I am changing directions
- This is a switchback from the regular trail

Math: I am superseding the order of operations.

Analogy: - Parenthesis:Math AS Turn Signals:Car

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Math: Foreign Language - Calculus

The most frequently abused, overused, and misused term in math is the **equals sign**. It should be used as a last resort and only when you mean *exactly the same as*. (See last item on this page for its proper usage). In the meantime, try these other terms to accurately convey your meaning:



Arrow

- implies
- leads to
- approaches
- yields
- if first is true, then second is true



Therefore

- logical consequence
- bottom line conclusion



Similar

- is related to
- like
- general
- is safe to use, usually can't go wrong!

And now for the big finish:



Equals

- identical
- exactly the same as
- quantities are substitutable
- use sparingly and only as a last resort
- could be hazardous to your grade if used incorrectly!

This is a very precise and beautiful sign.

When its integrity and purity are preserved, it works like an open channel (=) that can lead to a crisp, clear finish!