#### EQ

Syntax:

EQ eq-primary-switch [ switches ] ( [ eq-argument-list ] )

eq-argument-list is a list of arguments separated using a [separator](separator.docx) character. For implementations using a period (.) as the radix point, the [separator](separator.docx) character is a comma (,). For implementations using a comma (,) as the radix point, the [separator](separator.docx) character is a semicolon (;).

Description: Computes the specified mathematical equation.

Field Value: The [result](result.docx) of the specified mathematical equation. [Note: The [result](result.docx) of an EQ field can be used as an argument in another EQ field's eq-argument-list. end note]

Switches: One of the following eq-primary-switches: \a, \b, \d, \f, \i, \l, \o, \r, \s, and \x. Each of these switches has one or more subswitches, as shown below.

\a produces an array using the argument values in eq-argument-list (which are in row-major order) and the field-specific-switches below:

|  |  |
| --- | --- |
| \ac | Alignment is centered in each array column. |
| \al | Alignment is left in each array column. |
| \ar | Alignment is right in each array column. |
| \co field-argument | The number of columns in the array is specified by text in this switch's field-argument. In the absence of this switch, the number is 1. |
| \hs field-argument | Adds the integral number of points of horizontal [spacing](spacing.docx) specified by text in this switch's field-argument [between](between.docx) columns. |
| \vs field-argument | Adds the integral number of points of vertical [spacing](spacing.docx) specified by text in this switch's field-argument [between](between.docx) lines. |

\b brackets the single element in eq-argument-list in a size appropriate for that element. The default form of brackets is parentheses. The field-specific-switches below may be used:

|  |  |
| --- | --- |
| \bc \char | Uses the character designated by char as both the left and right bracket character. However, if char is {, [, (, or <, that character is used for the left bracket, and }, ], ), or >, respectively, is used for right bracket. |
| \lc \char | Uses the character designated by char as the left bracket character. |
| \rc \char | Uses the character designated by char as the right bracket character. |

\d Controls where the [next](next.docx) character following the EQ field is drawn (that is, the displacement). eq-argument-list shall have no arguments. The field-specific-switches below may be used:

|  |  |
| --- | --- |
| \ba field-argument | Draws to the left (backward) the integral number of points specified by text in this switch's field-argument. |
| \fo field-argument | Draws to the right (forward) the integral number of points specified by text in this switch's field-argument. |
| \li | Underlines the space up to the [next](next.docx) character. |

\f Creates a fraction with the first argument as numerator and the second argument as denominator, centered above and below the division line, respectively. eq-argument-list shall have exactly two arguments. There are no field-specific-switches for this switch.

\i Creates an integral using the specified or default symbol and three elements. The first argument is the lower limit, the second is the upper limit, and the third is the integrand. eq-argument-list shall have exactly three arguments. The field-specific-switches below may be used:

|  |  |
| --- | --- |
| \fc \char | Uses the character designated by char as the fixed-height character for the symbol.  |
| \in | Uses an inline [format](format.docx) with the limits displayed to the right of the symbol instead of above and below it.  |
| \pr | Uses the symbol Capital pi and creates a product. |
| \su | Uses the symbol Capital sigma and creates a summation. |
| \vc \char | Uses the character designated by char as the variable-height character for the symbol. The symbol matches the height of the third argument. |

\lf Creates a list from an arbitrary number of arguments. There are no field-specific-switches for this switch.

\o Using an arbitrary number of arguments, displays each successive argument on top of the previous one. Each character is displayed within an invisible character box, with the switches being available to align the boxes on top of one another. The field-specific-switches below may be used:

|  |  |
| --- | --- |
| \ac | Alignment character box center (the default). |
| \al | Alignment character box left. |
| \ar | Alignment character box right. |

\r Creates a radical. eq-argument-list shall have either one or two arguments. If it has one argument, the [result](result.docx) is the square root of that argument. If it has two arguments, the [result](result.docx) is the nth root of the second argument, where n is the first argument. There are no field-specific-switches for this switch.

\s Creates a subscript or superscript. One or more arguments are permitted. If more than one element is specified, the elements are stacked and left-aligned. The field-specific-switches below may be used:

|  |  |
| --- | --- |
| \ai field-argument | Adds space above a line in a paragraph by the integral number of points specified by text in this switch's field-argument. The default is 2 points. |
| \di field-argument | Adds space below a line in a paragraph by the integral number of points specified by text in this switch's field-argument. |
| \do field-argument | Moves a single argument below the adjacent text by the integral number of points specified by text in this switch's field-argument. The default is 2 points. |
| \up field-argument | Moves a single argument above the adjacent text by the integral number of points specified by text in this switch's field-argument. |

\x Creates one or more border segments around a single argument. By default, all four borders are added. eq-argument-list shall have no arguments. The field-specific-switches below may be used:

|  |  |
| --- | --- |
| \bo | Draws a horizontal border below the argument.  |
| \le | Draws a vertical border to the left of the argument.  |
| \ri | Draws a vertical border to the right of the argument.  |
| \to | Draws a horizontal border above the argument.  |

[Example: When the following fields are updated:

EQ \a \co 2 \ac \hs 10 ( 1000, 20, A, Sunday )
EQ \b \bc \| ( -100 ) EQ \b \bc \| ( \r(3, a + b)
xx EQ \d \fo 20 () xx EQ \d \fo 30 \li ()xx
EQ \f ( 1, 32 ) EQ \f ( 7, 64 )
EQ \i ( 0, ∞, x ) EQ \i \su \in ( 0, 10, x ) EQ \i \pr \in ( 0, 5, x )
EQ \i \fc \{ ( 0, 5, \f (x, 0.34) ) EQ \i \vc \{ ( 0, 5, \f (x, 0.34) )

EQ \l ( 0, 10 )
EQ \b \lc \[ \rc \) (\l (0, 10))
EQ \o ( 0, 0, 0 ) EQ \o ( 0, + ) EQ \o \ar ( 0, |, \_ )
EQ \r ( 2 ) EQ \r ( 2, x )
a EQ \s \up (2) + [b](b.docx) EQ \s \up (2)
a EQ \x ( + ) [b](b.docx) a EQ \x \to \le ( + ) [b](b.docx) a EQ \x \bo \ri ( + ) [b](b.docx)

The results are:

xxxxxx

a + [b](b.docx)

a[b](b.docx) a[b](b.docx) a[b](b.docx)

end example]