fourth example

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1 Math modes

When you want to add some mathematical notations containing mathematical symbols you'll need to write it in a special environment because LaTeX typesets maths notation differently than normal text. There are two main environments you need to know about.

1.1 Inline math mode

The math mode where formulas are displayed inline, in the middle of running text. Your mathematical formulas need to be enclosed in single dollar signs, e.g. $x^4 + x^2 = 0$

This inline formula $x = 4$ appears in the flow with the text.

1.2 Display math mode

The **Display** math mode where formulas are displayed centered on a new line. Your mathematical formulas need to be enclosed in double dollar signs, e.g.

$$x^4 + x^2 = 0$$

This display formula

$$x = 4$$

appears out of the text flow.

Of course formulas can be much more complex whether inline in text math mode $\forall x \in X, \quad \exists y \leq \epsilon$ or in display math mode:

$$\forall x \in X, \quad \exists y \leq \epsilon$$

You can read more about these modes in the LaTeX wikibook at `http://en.wikibooks.org/wiki/LaTeX/Mathematics#Mathematics_environments`

2 Superscript and subscript

Subscripts in latex are accomplished with the underscore $x_4 = 1$. Superscripts in latex are accomplished with the circumflex character (also called the hat character) $x^4 = 1$.

However, that alone only works with one character after the underscore or hat $x_40 = 1$. The solution to this problem is to include the subscripted or superscripted text in curly braces $x_{40} = 1$.

3 Fractions

In order to insert fractions in your text, you have the choice between the commands `\frac` and `\dfrac`.

This is how the `\frac` command renders in math mode: $\frac{x}{2}$

This is how the `\frac` command renders in display mode:

$$\frac{x}{2}$$

You'll notice that depending on the environment fractions render differently. In case you want to have the display mode rendering in inline math mode, you can use the `\dfrac` to do so: $\dfrac{x}{2}$. Using it in diplay mode however doesn't change anything and things render like previously:

$$\dfrac{x}{2}$$