

# Navigation

If you look at a page in Navipedia, you'll find three main navigation elements: The sidebar on the left gives you access to the different portals and important pages in the wiki. At the top of the page are the links which belong to the page currently displayed. Only logged-in users can see these links. Which links are shown depends on the authorisation level of the user. In the top right corner you'll find, as an anonymous user, the link to login. As a logged-in user you have a collection of personal links, like the one to your preferences.

## Sidebar

The sidebar is displayed on the left edge of the page below the Navipedia logo. This sidebar gives you access to the different portals and important pages in the wiki.

### Navigation

The link *Main page* brings you back to the start page of the wiki, as does a click on the logo in the top left corner. The links take you to the different portals and to the sections with book reviews and accident reports.

### Information

This section contains links to informational pages about Navipedia and to the contents page of the Help system.

### Toolbox

The toolbox contains a selection of links which change depending on what type of page you are viewing.

On all pages (except special pages):

- *What links here* takes you to a special page that lists the pages on this wiki which contain a link to the current page. This is helpful when you are looking for pages of related information. The *What links here* information can also be useful when you are refactoring wiki pages and need to check whether links to this page are still relevant after changes in the current page.
- The *Related changes* tool lists all recent changes in the pages linked to from the current page. Recent changes to all relevant template pages are included in the resulting page list. The "Hide minor edits" option that can be set in the user [preferences](#) applies, among other things, to *Related Changes*.

On all pages (including special pages):

- *Upload file* displays a special page that allows users to upload images and other files to the wiki. This link is only displayed if the user belongs to a user group that has the right to upload files. Uploaded files can be linked-from or embedded-in wiki pages. Uploading files, viewing files on the server, including them in wiki pages and managing the uploaded files is discussed in the [managing files](#) section of this manual.
- The *Special pages* tool lists the Navipedia special pages. In wiki terminology, a special page is one that presents information about the wiki and/or allows access to administration activities for the wiki. For example, a list of users registered with the wiki, statistics about the wiki such as the number of pages and number of page edits, system logs, a list of orphaned pages, and so on. These special pages are commonly generated when the special page is loaded rather than being stored in the wiki database.

## Page Tabs

The page tabs are only visible for logged-in users. They are displayed at the top of the article to the right of the site logo. These tabs allow you to perform actions or view pages that are related to the current article. The specific tabs displayed on your pages depend on the user group you belong to. On special pages only the namespace tab is displayed.

Default for all users

*[namespace](#)* (like article, portal, help page, special page)

*discussion*

*view source* or *edit* (depending on your privileges for this page)

*history*

*watch*

Extra tabs for content managers and/or sysops

*move*

*protect*

*delete*

## User Links

The user links are displayed at the top far right of the article. These links allow the user to quickly access user specific pages or to log out. For anonymous users there is a link to the wiki login page.

*<username>* links to your user page

*my talk* links to your discussion page

*preferences* allows you to change your personal site preferences

*my watchlist* gives a list of all pages that you are watching

*my contributions* is list of all contributions you have made to the wiki

*log out* to log out of the wiki

# Searching

The quickest way to find information in Navipedia is to look it up directly. On the left-hand side of your screen there is a **Search** box with two buttons under it labeled "Go" and "Search".

Put your keyword in the searchbox.

- **Go** - (or *Enter* on keyboard) will take you automatically to the article, if it exists.
- **Search** - will search the text of all pages on the wiki (with some restrictions, see below).

If you clicked 'search', or you clicked 'go' and the page you were looking for did not exist, you will be presented with a list of articles that matched your search criteria (or a message that no matches were found).

## How it works

Here's how the search works:

- Only the article content is searched - the page title is ignored.
- The article content is searched in its raw (wikitext) form - i.e. it searches the text that appears in the edit box when you click 'edit', not the rendered page. This means that content coming from an included template will not be picked up, but the target of piped links will be.
- Even if you enclose a phrase in quotes, the search looks for each word individually. e.g. if you enter "world war 2" it will return pages that contain "world" and "war" and "2".
- The search is not case-sensitive.

## Restricting the search

By default only the [namespaces](#) specified in your [preferences](#) will be searched. Logged-in users can change their preferences to specify the namespaces they want to search by default, or if you just want to specify different namespaces for a single search then you can do so on the search results page.

# Tracking changes

Navigpedia offers a collection of tools to keep track of what is going on in the wiki. So you can watch for example recent changes to all pages, newly created pages, popular pages or the contributions of one specific user.

The most interesting tool is [Special:Recentchanges](#). This special page displays all edits, file uploads, page moves, deletions and other actions done in the wiki. In the menu on top it offers a collection of links to customize your display: limit the number of changes shown, the number of days or restrict it to edits to a certain namespace. You can also hide edits marked as minor (don't forget that major changes can be flagged by a user as minor anyway).

One line in recentchanges consists of several links:

- *diff* displays the difference to the previous revision of the page,
- *hist* links to the revision history of the page,
- the link with the full title of the page brings you to the current version. If the title is in bold, it indicates that it is on your watchlist.

Next is a flag describing the article modification type:

- *N* signalizes a new page,
- *m* a minor edit,
- *b* an edit made by a bot.

Following the timestamp the user is mentioned with a link to his user and talk page and to his contributions. In italic follows a comment if the user has submitted one.

## Track a specific page

There are two tools to track changes on a specific page. You can either add a page to your watchlist (only logged-in users can do this), or you can turn on an RSS feed for this page.

To add a page to your watchlist, you just go to the page and click the **[watch]** tab. Future changes to the page and its associated Talk page will be listed on your watchlist, and the page will appear bolded in the list of recent changes to make it easier to pick out. If you want to remove the page from your watchlist later, click the **[unwatch]** tab.

To turn on the RSS feed for a certain page, you go to the page and click the **[history]** tab. In the toolbox there will appear a link to turn on *RSS* or *Atom*.

## See also

- [Special:Newpages](#)
- [Special:Recentchanges](#)
- [Special:Popularpages](#)
- [Special:Contributions/User](#) User contributions

# Starting a new page

Whether a user can create new pages depends on the rights of the user group he or she belongs to. Given the proper rights, new articles are created in the **Work in progress** section. Once approved, new articles are moved to the main section of this wiki.

Every article basically consists of three parts:

- Header
- Body
- Footer

The header contains the infobox for the article and possibly an introductory text. The body contains the article, if appropriate subdivided in sections and sub sections. The footer contains the category links. The following example assumes a new article in the category EGNOS.

```
{{Article Infobox2
|Category=EGNOS
|Title={{PAGENAME}}
|Authors=Benoit Roturier, DGAC/STNA, France; Eric Chatre GSA, GNSS Supervisory
Authority, Brussels, Belgium and Javier Ventura-Traveset, ESA, European Space Agency.
|Level=Medium
|YearOfPublication=2006
}}
This is the introductory text. A table of contents, based upon the headers, will
appear under this introduction.
==Heading level 1== The article can consist of several main sections.

===Heading level 2=== Each section can be subdivided in several sub sections.
====Heading level 3====
=====Heading level 4=====
==Heading level 1==

==Notes==
<references group="footnotes"/>

==References==
<references/>

At the end of the article the category links are added.
[[Category:EGNOS]] [[Category:EGNOS Fundamentals]]
```

There are several ways to start a new page.

## Using Wikilinks

MediaWiki makes it very easy to link wiki pages using a standard syntax (see [Links](#)). If you create a link to an article that doesn't exist yet, the link will be coloured red, **like this**. Clicking a red link, will take you to the edit page for the new article. Simply type your text, click save and the new page will be created.

## Using the URL

You can use the wiki's URL for creating a new page. The URL to an article of the wiki is usually something like this: `http://www.navigopedia.net/index.php/ARTICLE`

If you replace **ARTICLE** with the name of the page you wish to create, you will be taken to a blank page which indicates that no article of that name exists yet. Clicking the "*edit*" page tab at the top of the page will take you to the edit page for that article, where you can create the new page by typing your text, and clicking submit.

## From the search page

If you search for a page that doesn't exist (using the search box and 'go' button on the left of the page) then you will be provided with a link to create the new page. Note that this technique doesn't work if you use the 'search' button.

## Create redirects to your new page

Don't forget to setup redirects when you create a page. If you think another person may search for the page you've created by using a different name or spelling, please create the proper redirect(s).

To create a redirect, the **first line** of the redirect page should read `#REDIRECT` `[[Destination]]`, where `Destination` is the page to which people should be redirected. This must appear as the very first line of the page.

# Editing pages

## Article page

Whether you can edit an article or add new articles depends on the rights of the usergroup you belong to. If you want to add a new article, see [Help:Starting a new page](#). Making changes to an existing article only takes a few clicks.

For existing pages:

- Click the **edit** page tab
- Make changes to the text in the edit box. If you're making normal changes to the text like fixing spelling mistakes or grammar, inserting new sentences, etc, then you don't have to worry too much about formatting. When you do need to use some type of formatting, you do it using wiki syntax, see [Help:Formatting](#) for some of the common types of formatting used.
- Enter a short note in the **Summary** box describing your changes.
- Preview your changes with the **Preview** button.
- Click the **Save page** button.

## Discussion page

Every article has its own discussion page where logged-in users can ask questions, make suggestions, or discuss corrections. Click the **discussion** page tab to reach it. You can sign your message by writing 4 tildes (~~~~). The wiki software turns them into the current time and your username.

# Formatting

You can format your text using wiki markup. This consists of normal characters like asterisks, single quotes or equation marks which have a special function in the wiki, sometimes depending on their position. For example, to format a word in *italic*, you include it in two single quotes like `' 'this' '`

## Text formatting markup

Description	You type	You get
<i>applies anywhere</i>		
Italic text	<code>' 'italic' '</code>	<i>italic</i>
Bold text	<code>'''bold'''</code>	<b>bold</b>
Bold and italic	<code>''''''bold &amp; italic''''''</code>	<b><i>bold &amp; italic</i></b>
Escape wiki markup	<code>&lt;nowiki&gt;no ' 'markup' '&lt;/nowiki&gt;</code>	no "markup"
<i>only at the beginning of the line</i>		
Headings of different sizes	<code>==level 1== ===level 2=== ====level 3==== =====level 4=====</code>	<b>Level 1</b> <b>Level 2</b> <b>Level 3</b> <b>Level 4</b>
Horizontal rule	<code>----</code>	<hr/>
Bullet list	<code>* one * two * three ** three and one-third ** three and two-thirds</code>	<ul style="list-style-type: none"> <li>• one</li> <li>• two</li> <li>• three               <ul style="list-style-type: none"> <li>○ three and one-third</li> <li>○ three and two-thirds</li> </ul> </li> </ul>
Numbered list	<code># one # two&lt;br&gt;spanning several</code>	<ol style="list-style-type: none"> <li>1. one</li> <li>2. two</li> </ol>

	lines without breaking the numbering # three ## three point one ## three point two	spanning several lines without breaking the numbering 3. three 1. three point one 2. three point two
Mixture of bulleted and numbered lists	# one # two #* two point one #* two point two	1. one 2. two o two point one o two point two
Definition list	;Definition :item 1 :item 2	Definition item 1 item 2
Preformatted text	preformatted text is done with a space at the beginning of the line	preformatted text is done with a space at the beginning of the line

## Paragraphs

Mediawiki ignores normal line breaks. To start a new paragraph, leave an empty line. You can also start a newline with the HTML tag `<br />`.

## HTML

Some HTML-Tags are allowed in MediaWiki, for example `<code>`, `<div>`, `<span>` and `<font>`.

## More advanced formatting

Beyond the basic text formatting markup shown above, there are some more advanced formatting tricks:

- [Help:Links](#)
- [Help:Images](#)
- [Help:Tables](#)

# Links

There are three sorts of links in Navipedia:

1. internal links to other pages in the wiki
2. external links to websites
3. [inter-wiki links](#) (links to other wikis)

To add an internal link, enclose the name of the page you want to link to in double square brackets. When you save the page, you'll see the new link pointing to your page. If the page exists already, it is displayed in blue, empty pages are displayed in red. Selflinks to the current page are not transformed in URLs but displayed in bold.

The first letter of the target page is automatically capitalized and spaces are represented as underscores (typing an underscore in the link will have a similar effect as typing a space, but is not recommended, since the underscore will also be shown in the text).

## How to link

Description	You type	You get
Internal link	<code>[[Main Page]]</code>	<a href="#">Main Page</a>
Category link	<code>[[ :Category:Help]]</code>	<a href="#">Category:Help</a>
Piped link	<code>[[Main Page different text]]</code>	<a href="#">different text</a>
Anchor link	<code>[[#External links Anchor link]]</code>	<a href="#">Anchor link</a>
External link	<code>http://mediawiki.org</code>	<a href="http://mediawiki.org">http://mediawiki.org</a>
External link from internal image	<code>[[File:Logo_ICAO.gif link=http://www.icao.org]]</code>	

External link, different title	[ <a href="http://mediawiki.org">http://mediawiki.org</a> MediaWiki]	<a href="http://mediawiki.org">MediaWiki</a>
External link, unnamed	[ <a href="http://mediawiki.org">http://mediawiki.org</a> ]	[1]
External link, same host unnamed	[ <a href="http://{{SERVERNAME}}/pagename">http://{{SERVERNAME}}/pagename</a> ]	[2]
Interwiki link	[[Wikipedia:MediaWiki]]	<a href="#">Wikipedia:MediaWiki</a>
mailto	<a href="mailto:info@example.org">mailto:info@example.org</a>	<a href="mailto:info@example.org">mailto:info@example.org</a>
mailto unnamed	[ <a href="mailto:info@example.org">mailto:info@example.org</a> ]	[3]
mailto named	[ <a href="mailto:info@example.org">mailto:info@example.org</a> info]	<a href="mailto:info@example.org">info</a>
redirect	#REDIRECT [[Main Page]]	→ <a href="#">Main Page</a>

# Categories

To add an article to a category put the following at the end of the page you are editing...

```
[ [Category: {Name} ] ]
```

where {Name} is the name of the category you want to add it to. Any number of category tags may be added to the page - the page will be listed in all of them.

You can also specify an additional {Sort} parameter that dictates where the page will appear, alphabetically, within the category. This is achieved by using the following markup:

```
[ [Category: {Name} | {Sort} ] ]
```

So for example, to add this page to the 'Help' category, you would use:

```
[ [Category:Help|Categories ] ]
```

Note that we used 'Categories' as the sort parameter. Without this the page would be listed under 'H' for 'Help:Categories', instead of under 'C', which is more useful. Other situations where you might want to use the sort parameter is when you have articles about people that are titled as `FirstName LastName` but within the category you want them listed as `LastName, FirstName`.

Another way to sort the article in the correct letter without the namespace is

```
[ [Category:Help|{ {PAGENAME} } ] ]
```

This is extremely helpful when using templates which include a category tag.

*Note: the {sort} parameter does **not** affect how the page title is displayed within the category listing, just how it is ordered. In the above example, the link to this page will still be 'Help:Categories', and not 'Categories' as you might expect!*

## Linking to Category Pages

To create a link to a category page:

```
[ [ :Category: {name} ] ]
```

If you were linking to the Category Page for Help on Navipedia, the link would look like this:

[Category:Help](#)

If you want to display alternate text for the link:

```
[ [ :Category: {name} | {alternate text} ] ]
```

Here is an example of the same link to the Category Page for Help on Navipedia as above, but with alternative text: [Navipedia Help Index](#)

## **Categorize Categories**

Categories themselves and other uploaded files like Pictures can be categorized exactly like normal pages. It is useful to connect the article-categories with categories already in place to establish connections and hierarchies. To this end, after saving the article, follow the category links at the end of the page to see, if the category is already in place and if not, categorize them until you connect them with an existing category.

# Images

If you want to include images in an article, you can use uploaded files or you can link to external files.

## Uploaded files

To use an image or other file which has been [uploaded to the wiki](#), use:

```
[[File:Example.jpg]]
```

If you add a pipe (|) and some text after the filename, the text will be used as alternative text for text-only browsers:

```
[[File:Example.jpg|alternative text]]
```

If you don't want to display the image, you can link to the file's description page, by adding a colon:

```
[[File:Example.jpg]]
```

To bypass the description page and link directly to a file, use the "Media" pseudo-namespace:

```
[[Media:Example.jpg]]
```

You can also make piped links if you want some other text to be used:

```
[[File:Example.jpg|link text]] [[Media:Example.jpg|link text]]
```

## External images

You can embed external images using the same syntax used for linking to an external web page.

```
[http://url.for/some/image.png]
```

Or with different text:

```
[http://url.for/some/image.png link text here]
```

## Syntax for displaying an image

The full syntax for displaying an image is:

```
[[File:{name}|{options}]]
```

Where options can be zero or more of the following, separated by pipes:

- `thumb`, `thumbnail`, or `frame`: Controls how the image is formatted
- `left`, `right`, `center`, `none`: Controls the alignment of the image on the page
- `{width}px`: Resizes the image to the given width in pixels
- `{caption text}`

The options can be given in any order. If a given option does not match any of the other possibilities, it is assumed to be the caption text. Caption text can contain wiki links or other formatting.

## Gallery of images

It's easy to make a gallery of thumbnails with the `<gallery>` tag. The syntax is:

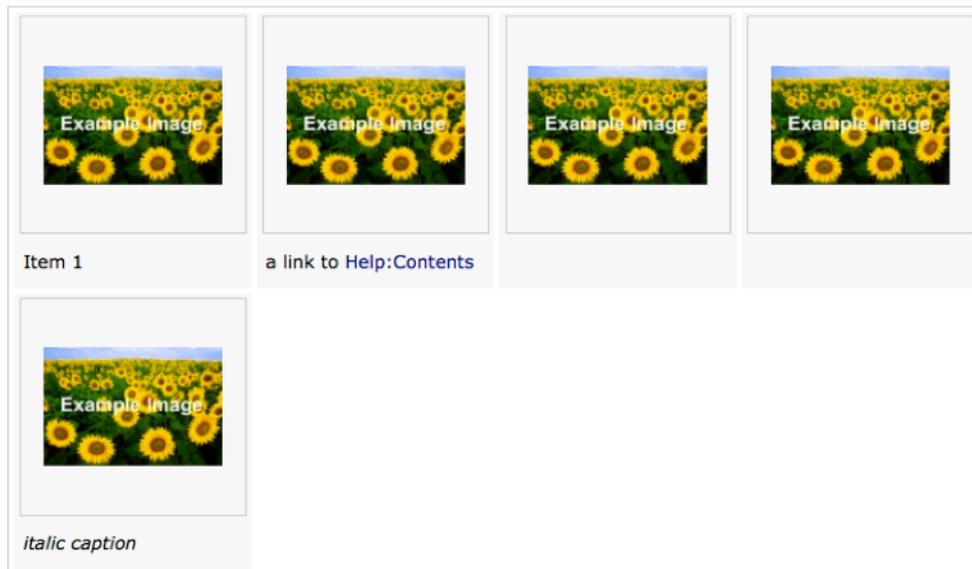
```
<gallery> Image:{filename}|{caption} Image:{filename}|{caption} {...}
</gallery>
```

Captions are optional, and may contain wiki links or other formatting.

for example:

```
<gallery> Image:Example.jpg|Item 1 Image:Example.jpg|a link to
[[Help:Contents]] Image:Example.jpg Image:Example.jpg
Image:Example.jpg|'italic caption' </gallery>
```

is formatted as:



## Examples

Description	You type	You get
Embed image (with alt text)	<code>[[File:Example.jpg Sunflowers]]</code>	
Link to description	<code>[[File:Example.jpg]]</code> <code>[[File:Example.jpg Sunflowers]]</code>	<a href="#">File:Example.jpg</a> <a href="#">Sunflowers</a>

page		
Link directly to file	<pre>[[Media:Example.jpg]] [[Media:Example.jpg Sunflowers]]</pre>	<a href="#">Media:Example.jpg</a> <a href="#">Sunflowers</a>
Thumbnail (centered, 100 pixels wide, with caption)	<pre>[[File:Example.jpg center thumb 100px Sunflowers]]</pre>	 
Border (100 pixels) Results in a very small gray border	<pre>[[File:Example.jpg border 100px]]</pre>	
Frameless Like thumbnail, respects user preferences for image width but without border and no right float.	<pre>[[File:Example.jpg frameless]]</pre>	

# Tables

Tables may be authored in wiki pages using either HTML table elements directly, or using wikicode formatting to define the table. The benefit of wikicode is that the table is constructed of character symbols which tend to make it easier to perceive the table structure in the article editing view compared to HTML table elements.

## Wiki table markup summary

{	start <b>table</b>
+	table <b>caption</b> , <i>optional</i> ; only one per table and between table start and first row
-	<b>table row</b> , <i>optional on first row</i> -- wiki engine assumes the first row
!	<b>table header</b> cell, <i>optional</i> . Consecutive table headers may be added on same line separated by double marks (!! ) or start on new lines, each with its own single mark (!).
	<b>table data</b> cell, <i>required!</i> Consecutive table data cells may be added on same line separated by double marks (   ) or start on new lines, each with its own single mark ( ).
}	end <b>table</b>

- The above marks must **start on a new line** except the double || and !! for optionally adding consecutive cells to a line.
- Each mark, except table end, optionally accepts one or more XHTML attributes. Attributes must be on the same line as the mark. Separate attributes from each other with a single space.
- Cells and caption (| or ||, ! or !!, and |+ ) hold content. So separate any attributes from content with a single pipe (|). Cell content may follow on same line or on following lines.
- Table and row marks ({| and |- ) do not directly hold content. Do *not* add pipe (|) after their optional attributes. If you erroneously add a pipe after attributes for the table mark or row mark the parser will delete it *and* your final attribute if it was touching the erroneous pipe!
- **Content** may (a) follow its cell mark on the same line after any optional XHTML attributes or (b) on lines below the cell mark. Content that uses wiki markup that itself needs to start on a new line, such as lists, headers, or nested tables, must of course be on its own new line.
- Negative value minus sign can break your table (it may display missing some values) if you start a cell on a new line with a negative number or a parameter that evaluates to a negative number (|-6) because that is the wiki markup for table row, not table cell. To avoid this, insert a space before the value (| -6) or use in-line cell markup (||-6).

## Simple table

### Plain

The following table lacks borders and good spacing but shows the simplest wiki markup table structure

Orange	Apple	Bread	Pie
Butter	Ice cream		

### Alternative

For more table-ish looking wiki markup cells can be listed on one line separated by `||`. This does not scale well for longer cell content such as paragraphs. It works well for short bits of content however, such as our example table.

Extra spaces within cells in the wiki markup can be added, as I have done in the wiki markup below, to make the wiki markup itself look better but they do not affect the actual table rendering.

HTML attributes can be added to this table following the examples in other tables on this page but have been left out of the following example for simplicity.

Orange	Apple	more
Bread	Pie	more
Butter	Ice cream	and more

```
{| | Orange || Apple ||
more |- | Bread || Pie
|| more |- | Butter || Ice
cream || and more |}
```

## HTML attributes

You can add HTML attributes to make your table look better:

**border="1"**

Orange	Apple
Bread	Pie
Butter	Ice cream

```
{| border="1" |Orange |Apple |-
|Bread |Pie |- |Butter |Ice cream
|}
```

**align="center" border="1"**

Orange	Apple
Bread	Pie
Butter	Ice cream

```
{| align="center" border="1"
|Orange |Apple |- |Bread |Pie |-
|Butter |Ice cream |}
```

**align="right" border="1"** You can put attributes on individual **cells**. Numbers for example may look better aligned right

Orange	Apple	12,333.00
Bread	Pie	500.00
Butter	Ice cream	1.00

```
{| border="1" |Orange |Apple
|align="right"|12,333.00 |- |Bread
|Pie |align="right"|500.00 |-
|Butter |Ice cream
|align="right"|1.00 |}
```

You can put attributes on individual **rows**, too.

Orange	Apple	12,333.00
Bread	Pie	500.00
<i>Butter</i>	<i>Ice cream</i>	<i>1.00</i>

```
{| border="1" |Orange |Apple
|align="right"|12,333.00 |- |Bread
|Pie |align="right"|500.00 |-
style="font-style:italic;
color:#008542;" |Butter |Ice cream
|align="right"|1.00 |}
```

**cellspacing="0" border="1"**

Orange	Apple
Bread	Pie
Butter	Ice cream

```
{| cellspacing="0" border="1"
|Orange |Apple |- |Bread |Pie |-
|Butter |Ice cream |}
```

**cellpadding="20" cellspacing="0" border="1"**

Orange	Apple
Bread	Pie
Butter	Ice cream

```
{| cellpadding="20"
cellspacing="0" border="1" |Orange
|Apple |- |Bread |Pie |- |Butter
|Ice cream |}
```

## CSS styles

CSS style attributes can be added with or without other HTML attributes

**style="color:#008542;background-color:#FDC82F;" cellpadding="20" cellspacing="0" border="1"**

Orange	Apple
Bread	Pie
Butter	Ice cream

```
{| style="#008542;background-
color:#FDC82F;" cellpadding="20"
cellspacing="0" border="1" |Orange
|Apple |- |Bread |Pie |- |Butter
|Ice cream |}
```

## Table headings

Table headings can be created by using ! instead of l. Headings usually show up bold and centered by default.

### Top headings

Each column

<b>Yummy</b>	<b>Yummier</b>
Orange	Apple
Bread	Pie
Butter	Ice cream

```
{| border="1" cellpadding="20"
cellspacing="0" !Yummy !Yummier |-
|Orange |Apple |- |Bread |Pie |-
|Butter |Ice cream |}
```

### Colspan="2"

<b>Yummies</b>	
Orange	Apple
Bread	Pie
Butter	Ice cream

```
{| border="1" cellpadding="20"
cellspacing="0" !
colspan="2"|Yummies |- |Orange
|Apple |- |Bread |Pie |- |Butter
|Ice cream |}
```

### Side headings

#### Default

<b>Fruit</b>	Orange	Apple
<b>Dish</b>	Bread	Pie

```
{| border="1"
cellpadding="20"
cellspacing="0" !Fruit
|Orange |Apple |- !Dish
|Bread |Pie |- !Complement
|Butter |Ice cream |}
```

<b>Complement</b>	Butter	Ice cream
-------------------	--------	-----------

**Right justify** Right justified side headings can be done as follows

<b>Fruit</b>	Orange	Apple
<b>Dish</b>	Bread	Pie
<b>Complement</b>	Butter	Ice cream

```
{| border="1"
cellpadding="20"
cellspacing="0"
!align="right" |Fruit |Orange
|Apple |- !align="right"
|Dish |Bread |Pie |-
!align="right" |Complement
|Butter |Ice cream |}
```

## HTML headings

HTML H1, H2, H3, H4 etc. headings can be created the standard wiki markup way with `==equal==` signs and **must be on a line all by themselves** to work. If you click on an edit tab for a heading within a table, edit, and preview, the parent table will display erroneously broken because part of it will be missing. So preview the whole table. Keep the heading hierarchy consistent with the rest of the page so that the table of contents at page top works correctly.

<b>Yummiest</b>	
Orange	Apple
Bread	Pie
Butter	Ice cream

```
{| border="1" cellpadding="20"
cellspacing="0" |colspan="2" |
====Yummiest==== |- |Orange |Apple
|- |Bread |Pie |- |Butter |Ice
cream |}
```

# Table caption

A **table caption** can be added to the top of any table as follows

Food complements	
Orange	Apple
Bread	Pie
Butter	Ice cream

```
{| border="1" cellpadding="20"
cellspacing="0" |+Food complements
|- |Orange |Apple |- |Bread |Pie
|- |Butter |Ice cream |}
```

**Attributes** can be added to the caption as follows

Orange	Apple
Bread	Pie
Butter	Ice cream
<i>Food complements</i>	

```
{| border="1" cellpadding="20"
cellspacing="0" |+align="bottom"
style="color:#D0103A;"|''Food
complements'' |- |Orange |Apple |-
|Bread |Pie |- |Butter |Ice cream
|}
```

# Colours

## Color Codes

Colours as defined by ESA Corporate Identity.

<i>Neutral Palette</i>	<i>Codes</i>	<i>Primary Palette</i>	<i>Codes</i>	<i>Secondary Palette</i>	<i>Codes</i>
ESA-Black	000000	ESA-Blue	#00338D	ESA-DarkBlue	#002664
ESA-Black85	4D4F53	ESA-Azure	#0098DB	ESA-DarkAzure	#00549F
ESA-Black75	747678	ESA-Green	#008542	ESA-DarkGreen	#284E36
ESA-Black45	9A9B9C	ESA-Orange	#E37222	ESA-DarkOrange	#9D5116
ESA-Black15	D5D6D2	ESA-Red	#D0103A	ESA-DarkRed	#822433
ESA-Silver	8B8D8E	ESA-Yellow	#FDC82F	ESA-DarkYellow	#B88B00

# Math

## From Navipedia

MediaWiki uses a subset of TeX markup, including some extensions from LaTeX and AMS-LaTeX, for mathematical formulae. It generates either PNG images or simple HTML markup, depending on user preferences and the complexity of the expression.

More precisely, MediaWiki filters the markup through Texvc, which in turn passes the commands to TeX for the actual rendering. Thus, only a limited part of the full TeX language is supported; see below for details.

## Technicals

### Syntax

Math markup goes inside the math: `<math> . . . </math>` tag.

Similar to HTML, in TeX extra spaces and newlines are ignored.

### Rendering

The PNG images are black on white (not transparent). These colors, as well as font sizes and types, are independent of browser settings or CSS. Font sizes and types will often deviate from what HTML renders. Vertical alignment with the surrounding text can also be a problem.

The `alt` attribute of the PNG images (the text that is displayed if your browser can't display images; Internet Explorer shows it up in the hover box) is the wikitext that produced them, excluding the `<math>` and `</math>`.

Apart from function and operator names, as is customary in mathematics for variables, letters are in italics; digits are not. For other text, (like variable labels) to avoid being rendered in italics like variables, use `\text`, `\mbox`, or `\mathrm`. You can also define new function names using `\operatorname{ . . . }`. For example, `<math>\text{abc}</math>` gives abc. This does not work for special characters, they are ignored unless the whole `<math>` expression is rendered in HTML:

- `<math>\text{abcdefghijklmnopqrstuvwxyàáâãäåæçèéëèìíîïðñòóôõ÷øùúûýþ}</math>`
- `<math>\text{abcdefghijklmnopqrstuvwxyàáâãäåæçèéëèìíîïðñòóôõ÷øùúûýþ}\,</math>`

gives:

- abcdefghijklmnopqrstuvwxy
- **abcdefghijklmnopqrstuvwxy**

Nevertheless, using `\mbox` instead of `\text`, more characters are allowed

For example,

- `<math>\mbox{abcdefghijklmnopqrstuvwxyàáâãäåæçèéëèìíîïðñòóôõ÷øùúûýþ}</math>`
- `<math>\mbox{abcdefghijklmnopqrstuvwxyàáâãäåæçèéëèìíîïðñòóôõ÷øùúûýþ}\,</math>`

gives:

- abcdefghijklmnopqrstuvwxyz
- $\text{abcdefghijklmnopqrstuvwxyz}$

But  $\text{\mbox{\delta}}$  and  $\text{\mbox{b}}$  will give an error:

- **Failed to parse (lexing error):  $\text{\mbox{\delta}}$**
- **Failed to parse (lexing error):  $\text{\mbox{b}}$**

## Functions, symbols, special characters

### Accents/diacritics

$\text{\acute{a}}$   $\text{\grave{a}}$   $\text{\hat{a}}$   $\text{\tilde{a}}$   $\text{\breve{a}}$   $\text{\check{a}}$   $\text{\bar{a}}$   $\text{\ddot{a}}$   $\text{\dot{a}}$

$\acute{a}$   $\grave{a}$   $\hat{a}$   $\tilde{a}$   $\breve{a}$

$\check{a}$   $\bar{a}$   $\ddot{a}$   $\dot{a}$

### Standard functions

$\text{\sin}$   $\text{\cos}$   $\text{\tan}$   $\text{\csc}$   $\text{\sec}$   $\text{\cot}$   $\text{\arcsin}$   $\text{\arccos}$   $\text{\arctan}$   $\text{\sinh}$   $\text{\cosh}$   $\text{\tanh}$   $\text{\coth}$   $\text{\operatorname{sh}}$   $\text{\operatorname{ch}}$   $\text{\operatorname{arsinh}}$   $\text{\operatorname{arcosh}}$   $\text{\operatorname{artanh}}$   $\text{\lim}$   $\text{\limsup}$   $\text{\liminf}$   $\text{\min}$   $\text{\max}$   $\text{\inf}$   $\text{\sup}$   $\text{\exp}$   $\text{\ln}$   $\text{\lg}$   $\text{\log}$   $\text{\ker}$   $\text{\deg}$   $\text{\gcd}$   $\text{\Pr}$   $\text{\det}$   $\text{\hom}$   $\text{\arg}$   $\text{\dim}$

$\sin a$   $\cos b$   $\tan c$

$\sec d$   $\csc e$   $\cot f$

$\arcsin h$   $\arccos i$   $\arctan j$

$\sinh k$   $\cosh l$   $\tanh m$   $\coth n$

$\operatorname{sh} o$   $\operatorname{ch} p$   $\operatorname{th} q$

$\operatorname{arsinh} r$   $\operatorname{arcosh} s$   $\operatorname{artanh} t$

$\lim u$   $\limsup v$   $\liminf w$   $\min x$   $\max y$

$\inf z$   $\sup a$   $\exp b$   $\ln c$   $\lg d$   $\log e$

$\ker g$   $\deg h$   $\gcd i$   $\Pr j$   $\det k$   $\operatorname{hom} l$   $\arg m$   $\dim n$

### Modular arithmetic

$s_k \equiv 0 \pmod{m}$   $a \bmod b$

$s_k \equiv 0 \pmod{m}$

$a \bmod b$

### Derivatives

$\nabla$   $\partial_x$   $\frac{\partial}{\partial x}$   $\dot{x}$   $\ddot{y}$   $\frac{dy}{dx}$   $\frac{d^2 y}{dx^2}$

$\nabla$   $\partial_x$   $\frac{\partial}{\partial x}$   $\dot{x}$   $\ddot{y}$   $\frac{dy}{dx}$   $\frac{d^2 y}{dx^2}$

### Sets

$\forall$   $\exists$   $\emptyset$   $\emptyset$   $\in$   $\ni$   $\notin$   $\subset$   $\supset$   $\subseteq$   $\supseteq$

$\forall$   $\exists$   $\emptyset$   $\emptyset$   $\in$   $\ni$   $\notin$   $\subset$   $\supset$   $\subseteq$   $\supseteq$

`\subseteq \supset \supseteq`  
`\cap \bigcap \cup \bigcup \biguplus`  
`\setminus \smallsetminus`  
`\sqsubset \sqsubseteq \sqsupset`  
`\sqsupseteq \sqcap \sqcup \bigsqcup`



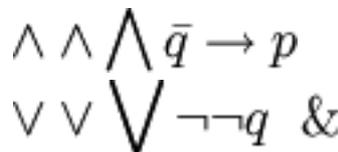
### Operators

`+ \oplus \bigoplus \pm \mp -`  
`\times \otimes \bigotimes \cdot \circ \bullet \odot`  
`\bullet \bigodot`  
`\star * / \div \frac{1}{2}`



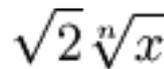
### Logic

`\land (or \and) \wedge \bigwedge`  
`\bar{q} \to p`  
`\lor \vee \bigvee \lnot \neg q \And`



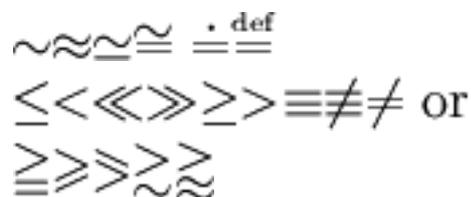
### Root

`\sqrt{2} \sqrt[n]{x}`



### Relations

`\sim \approx \simeq \cong \dot{=}`  
`\overset{\underset{\mathrm{def}}{}}{=}`  
`\le < \ll \gg \ge > \equiv \not\equiv` or  
`\ne \mbox{or} \neq \propto`  
`\geqq \geqslant \eqslantgtr \gtrsim`  
`\gtrapprox`



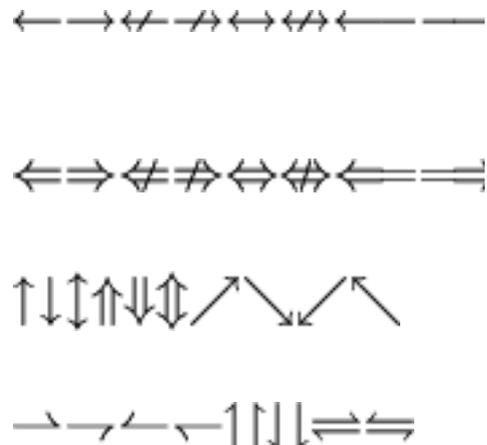
### Geometric

`\Diamond \Box \triangle \angle \perp`  
`\mid \nmid \mid 45^\circ`

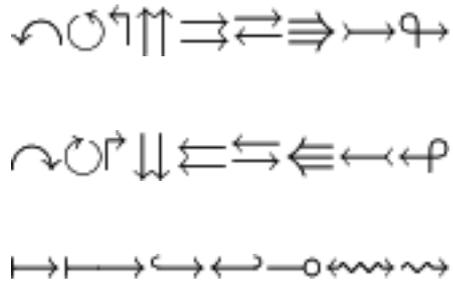


### Arrows

`\leftarrow (or \gets) \rightarrow (or`  
`\to) \leftarrow \rightarrow`  
`\leftrightarrow \nleftrightarrow`  
`\longleftarrow \longrightarrow`  
`\longleftrightarrow`  
`\Leftarrow \Rightarrow \nLeftarrow`  
`\nRightarrow \Leftrightarrow`  
`\nLeftrightarrow \Longleftarrow`  
`\Longrightarrow \Longleftrightarrow (or`  
`\iff)`  
`\uparrow \downarrow \updownarrow`  
`\Uparrow \Downarrow \Updownarrow`  
`\nearrow \searrow \swarrow \nwarrow`  
`\rightharpoonup \rightharpoondown`  
`\leftharpoonup \leftharpoondown`  
`\upharpoonleft \upharpoonright`  
`\downharpoonleft \downharpoonright`  
`\rightleftharpoons \leftrightharpoons`

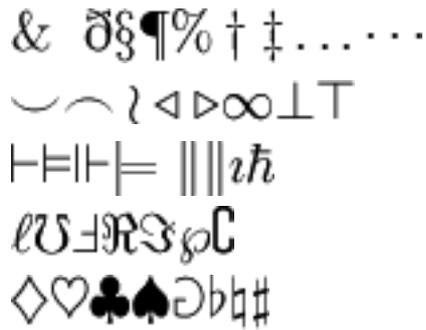


$\curvearrowleft$   $\circlearrowleft$   $\Lsh$   
 $\upuparrows$   $\rightrightarrows$   
 $\rightleftarrows$   $\Rrightarrow$   
 $\rightarrowtail$   $\looparrowright$   
 $\curvearrowright$   $\circlearrowright$   $\Rsh$   
 $\downdownarrows$   $\leftleftarrows$   
 $\leftrightharrows$   $\Lleftarrow$   
 $\leftarrowtail$   $\looparrowleft$   
 $\mapsto$   $\longmapsto$   $\hookrightarrow$   
 $\hookleftarrow$   $\multimap$   
 $\leftrightsquigarrow$   $\rightsquigarrow$



### Special

$\And$   $\eth$   $\S$   $\P$   $\%$   $\dagger$   $\ddagger$   $\dots$   
 $\ldots$   $\cdots$   
 $\smile$   $\frown$   $\wr$   $\triangleleft$   
 $\triangleright$   $\infty$   $\bot$   $\top$   
 $\vdash$   $\Vdash$   $\Vdash$   $\models$   $\lVert$   
 $\rVert$   $\imath$   $\hbar$   
 $\ell$   $\mho$   $\Finv$   $\Re$   $\Im$   $\wp$   $\complement$   
 $\diamondsuit$   $\heartsuit$   $\clubsuit$   
 $\spadesuit$   $\Game$   $\flat$   $\natural$   $\sharp$



### Unsorted (new stuff)

$\vartriangle$   $\triangledown$   $\lozenge$   
 $\circledS$   $\measuredangle$   $\nexists$   $\Bbbk$   
 $\backprime$   $\blacktriangle$   
 $\blacktriangledown$   
 $\blacksquare$   $\blacklozenge$   $\bigstar$   
 $\sphericalangle$   $\diagup$   $\diagdown$   
 $\dotplus$   $\Cap$   $\Cup$   $\barwedge$   
 $\veebar$   $\doublebarwedge$   $\boxminus$   
 $\boxtimes$   $\boxdot$   $\boxplus$   
 $\divideontimes$   $\ltimes$   $\rtimes$   
 $\leftthreetimes$   
 $\rightthreetimes$   $\curlywedge$   $\curlyvee$   
 $\circleddash$   $\circledast$   $\circledcirc$   
 $\centerdot$   $\intercal$   $\leqq$   $\leqslant$   
 $\eqslantless$   $\lessapprox$   $\approxeq$   
 $\lessdot$   $\lll$   $\lessgtr$   $\lesseqgtr$   
 $\lesseqgtr$   $\doteqdot$   $\risingdotseq$   
 $\fallingdotseq$   $\backsim$   $\backsimeq$   
 $\subseteqq$   $\Subset$   $\preccurlyeq$   
 $\curlyeqprec$   $\precsim$   $\precapprox$   
 $\vartriangleleft$   
 $\Vdash$   $\bumpeq$   $\Bumpeq$   $\eqsim$   $\gtrdot$   
 $\ggg$   $\gtrless$   $\gtreqless$   $\gtreqqless$   
 $\eqcirc$   $\circeq$   $\triangleq$   $\thicksim$   
 $\thickapprox$   $\supseteqq$   
 $\Supset$   $\succcurlyeq$   $\curlyeqsucc$   
 $\succsim$   $\succapprox$   $\vartriangleright$   
 $\shortmid$   $\shortparallel$   $\between$   
 $\pitchfork$   
 $\varpropto$   $\blacktriangleleft$   
 $\therefore$   $\backepsilon$   
 $\blacktriangleright$   $\because$   $\nleqslant$   
 $\nleqq$   $\lneq$   $\lneqq$



<code>\lvertneqq \lnsim \lnapprox \nprec</code>	
<code>\npreceq \precneqq \precnsim</code>	
<code>\precnapprox \nsim \nshortmid</code>	
<code>\nvDash \Vdash \ntriangleleft</code>	
<code>\ntrianglelefteq \subsetneq \subsetneqq</code>	
<code>\varsubsetneq \subsetneqq</code>	
<code>\varsubsetneqq \ngtr</code>	
<code>\subsetneq</code>	
<code>\ngeqslant \ngeqq \gneq \gneqq</code>	
<code>\gvertneqq \gnsim \gnapprox \nsucc</code>	
<code>\nsucceq \succeq</code>	
<code>\succnsim \succnapprox \ncong</code>	
<code>\nshortparallel \nparallel \nvDash</code>	
<code>\VDash \ntriangleright</code>	
<code>\ntrianglerighteq \nsupseteq</code>	
<code>\nsupseteqq \varsupseteq \supseteqq</code>	
<code>\varsupseteqq</code>	
<code>\jmath \surd \ast \uplus \diamond</code>	
<code>\bigtriangleup \bigtriangledown \ominus</code>	
<code>\oslash \odot \bigcirc \amalg \prec</code>	
<code>\succ \preceq \succeq</code>	
<code>\dashv \asymp \doteq \parallel</code>	
<code>\ulcorner \urcorner \llcorner \lrcorner</code>	

## Larger expressions

### Subscripts, superscripts, integrals

Feature	Syntax	How it looks rendered	
		HTML	PNG
Superscript	<code>a^2</code>	$a^2$	
Subscript	<code>a_2</code>	$a_2$	
Grouping	<code>a^{2+2}</code>	$a^{2+2}$	
	<code>a_{i,j}</code>	$a_{i,j}$	

Combining sub & super without and with horizontal separation	$x_2^3$	$x_2^3$	$x_2^3$
	$\{x_2\}^3$	$x_2^3$	$x_2^3$
Super super	$10^{\{10^{\{ \backslash, \! \{8\} \} \}}$	$10^{10^8}$	
Super super	$10^{\{10^{\{ \overset{8}{\} \} \}}$	$10^{10^8}$	
Super super (wrong in HTML in some browsers)	$10^{\{10^8\}}$	$10^{10^8}$	
Preceding and/or Additional sub & super	$\sideset{1^2}{3^4}\prod_a^b$	$2 \prod_1^b_3^4 a$	
	$\}_1^2 \! \! \Omega_3^4$	$2 \Omega_3^4$	
Stacking	$\overset{\alpha}{\omega}$	$\omega^\alpha$	
	$\underset{\alpha}{\omega}$	$\omega_\alpha$	
	$\overset{\alpha}{\underset{\gamma}{\omega}}$	$\omega^\alpha_\gamma$	
	$\stackrel{\alpha}{\omega}$	$\omega^\alpha$	

Derivative (forced PNG)	<code>x', y'', f', f''\!</code>		$x', y'', f', j$
Derivative (f in italics may overlap primes in HTML)	<code>x', y'', f', f''</code>	$x'y''f'f''$	$x', y'', f', j$
Derivative (wrong in HTML)	<code>x^\prime, y^{\prime\prime}</code>	$x', y''$	$x', y''$
Derivative (wrong in PNG)	<code>x\prime, y\prime\prime</code>	$x!, y!!$	$x!, y!!$
Derivative dots	<code>\dot{x}, \ddot{x}</code>	$\dot{x}, \ddot{x}$	
Underlines, overlines, vectors	<code>\hat a \ \bar b \ \vec c</code>	$\hat{a} \ \bar{b} \ \vec{c}$	
	<code>\overrightarrow{a b} \ \overleftarrow{c d} \ \widehat{d e f}</code>	$\overrightarrow{ab} \ \overleftarrow{cd} \ \widehat{def}$	
	<code>\overline{g h i} \ \underline{j k l}</code>	$\overline{ghi} \ \underline{jkl}$	
	<code>\not 1 \ \cancel{123}</code>	$\cancel{1} \ \cancel{123}$	
Arrows	<code>A \xleftarrow{n+\mu-1} B \xrightarrow[T]{n\pm i-1} C</code>	$A \xleftarrow{n+\mu-1} B \xrightarrow[T]{n\pm i-1} C$	
Overbraces	<code>\overbrace{ 1+2+\cdots+100 }^{5050}</code>	$\overbrace{1 + 2 + \cdots + 100}^{5050}$	

Underbraces	<code>\underbrace{ a+b+\cdots+z }_{26}</code>	$\underbrace{a + b + \cdots + z}_{26}$
Sum	<code>\sum_{k=1}^N k^2</code>	$\sum_{k=1}^N k^2$
Sum (force <code>\textstyle</code> )	<code>\textstyle \sum_{k=1}^N k^2</code>	$\sum_{k=1}^N k^2$
Product	<code>\prod_{i=1}^N x_i</code>	$\prod_{i=1}^N x_i$
Product (force <code>\textstyle</code> )	<code>\textstyle \prod_{i=1}^N x_i</code>	$\prod_{i=1}^N x_i$
Coproduct	<code>\coprod_{i=1}^N x_i</code>	$\prod_{i=1}^N x_i$
Coproduct (force <code>\textstyle</code> )	<code>\textstyle \coprod_{i=1}^N x_i</code>	$\prod_{i=1}^N x_i$
Limit	<code>\lim_{n \to \infty} x_n</code>	$\lim_{n \rightarrow \infty} x_n$
Limit (force <code>\textstyle</code> )	<code>\textstyle \lim_{n \to \infty} x_n</code>	$\lim_{n \rightarrow \infty} x_n$

Integral	<code>\int\limits_{1}^{3}\frac{e^3/x}{x^2}\, dx</code>	$\int_1^3 \frac{e^3/x}{x^2} dx$
Integral (alternate limits style)	<code>\int_{1}^{3}\frac{e^3/x}{x^2}\, dx</code>	$\int_1^3 \frac{e^3/x}{x^2} dx$
Integral (force <code>\textstyle</code> )	<code>\textstyle \int\limits_{-N}^{N} e^x\, dx</code>	$\int_{-N}^N e^x dx$
Integral (force <code>\textstyle</code> , alternate limits style)	<code>\textstyle \int_{-N}^{N} e^x\, dx</code>	$\int_{-N}^N e^x dx$
Double integral	<code>\iint\limits_D \, dx\,dy</code>	$\iint_D dx dy$
Triple integral	<code>\iiint\limits_E \, dx\,dy\,dz</code>	$\iiint_E dx dy dz$
Quadruple integral	<code>\iiiiint\limits_F \, dx\,dy\,dz\,dt</code>	$\iiiiiint_F dx dy dz dt$
Line or path integral	<code>\int_C x^3\, dx + 4y^2\, dy</code>	$\int_C x^3 dx + 4y^2 dy$

Closed line or path integral	<code>\oint_C x^3\, dx + 4y^2\, dy</code>	$\oint_C x^3 dx + 4y^2 dy$
Intersections	<code>\bigcap_1^n p</code>	$\bigcap_1^n p$
Unions	<code>\bigcup_1^k p</code>	$\bigcup_1^k p$

## Fractions, matrices, multilines

Feature	Syntax	How it looks rendered
Fractions	<code>\frac{1}{2}=0.5</code>	$\frac{1}{2} = 0.5$
Small Fractions	<code>\tfrac{1}{2} = 0.5</code>	$\tfrac{1}{2} = 0.5$
Large (normal) Fractions	<code>\dfrac{k}{k-1} = 0.5</code> <code>\qqquad \dfrac{2}{c + \dfrac{1}{d + \dfrac{1}{2}}} = a</code>	$\frac{k}{k-1} = 0.5$ $c + \frac{2}{d + \frac{1}{2}}$
Large (nested) Fractions	<code>\cfrac{2}{c + \dfrac{1}{d + \dfrac{1}{2}}} = a</code>	$c + \frac{2}{d + \frac{1}{2}} = a$
Binomial coefficient s	<code>\binom{n}{k}</code>	$\binom{n}{k}$
Small Binomial coefficient s	<code>\tbinom{n}{k}</code>	$\tbinom{n}{k}$

Large  
(normal)  
Binomial  
coefficient  
s

$$\text{\dbinom{n}{k}}$$

$$\begin{matrix} x & y \\ z & v \end{matrix}$$

$$\begin{vmatrix} x & y \\ z & v \end{vmatrix}$$

$$\begin{Vmatrix} x & y \\ z & v \end{Vmatrix}$$

Matrices

$$\begin{bmatrix} 0 & \cdots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \cdots & 0 \end{bmatrix}$$

$$\begin{Bmatrix} x & y \\ z & v \end{Bmatrix}$$

$$\begin{pmatrix} x & y \\ z & v \end{pmatrix}$$

$$\begin{smallmatrix} a & b \\ c & d \end{smallmatrix}$$

Case  
distinction  
s

$$f(n) = \begin{cases} n/2, & \text{if } n \text{ is even} \\ 3n+1, & \text{if } n \text{ is odd} \end{cases}$$

Multiline  
equations

$$\begin{aligned} f(x) &= (a+b)^2 \\ &= a^2 + 2ab + b^2 \end{aligned}$$

$$\begin{aligned} f(x) &= (a-b)^2 \\ &= a^2 - 2ab + b^2 \end{aligned}$$

Multiline  
equations  
(must define  
number of  
columns used  
{lcr}) (should  
not be used  
unless needed)

$$\begin{array}{lcl} z & & = a \\ & & \\ f(x,y,z) & = & x + y + z \end{array}$$

Multiline equations (more) `\begin{array}{lcr} z & = & a \\ & \& a \ \ f(x,y,z) & = \\ & \& x + y + z & \\ & \end{array}` 
$$f(x,y,z) = x + y + z$$

Breaking up a long expression so that it wraps when necessary. `<math>f(x) = \sum_{n=0}^{\infty} a_n x^n </math> <math>= a_0 + a_1x + a_2x^2 + \dots</math>` 
$$f(x) = \sum_{n=0}^{\infty} a_n x^n = a_0 + a_1x + a_2x^2 + \dots$$

Simultaneous equations `\begin{cases} 3x + 5y + z \\ 7x - 2y + 4z \\ -6x + 3y + 2z \end{cases}` 
$$\begin{cases} 3x + 5y + z \\ 7x - 2y + 4z \\ -6x + 3y + 2z \end{cases}$$

Arrays `\begin{array}{|c|c||c|} \hline a & b & S \\ \hline 0 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{array}` 
$$\begin{array}{|c|c||c|} \hline a & b & S \\ \hline 0 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{array}$$

### Parenthesizing big expressions, brackets, bars

Feature	Syntax	How it looks rendered
Bad	<code>( \frac{1}{2} )</code>	$(\frac{1}{2})$
Good	<code>\left ( \frac{1}{2} \right )</code>	$\left(\frac{1}{2}\right)$

You can use various delimiters with `\left` and `\right`:

Feature	Syntax	How it looks rendered
Parentheses	<code>\left ( \frac{a}{b} \right )</code>	$\left(\frac{a}{b}\right)$
Brackets	<code>\left [ \frac{a}{b} \right ]</code> <code>\quad \left \lbrack \frac{a}{b} \right \rbrack</code>	$\left[\frac{a}{b}\right]$ $\left[\frac{a}{b}\right]$
Braces	<code>\left \{ \frac{a}{b} \right \}</code> <code>\quad \left \lbrace \frac{a}{b} \right \rbrace</code>	$\left\{\frac{a}{b}\right\}$ $\left\{\frac{a}{b}\right\}$

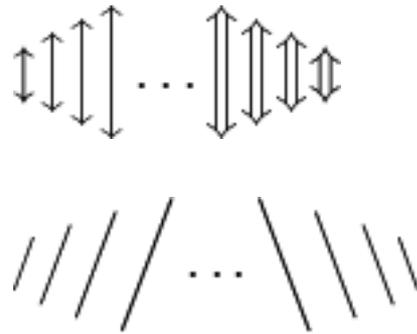
Angle brackets	<code>\left \langle \frac{a}{b} \right \rangle</code>	$\left\langle \frac{a}{b} \right\rangle$
Bars and double bars	<code>\left   \frac{a}{b} \right   \left \Vert \frac{c}{d} \right \Vert</code>	$\left  \frac{a}{b} \right  \left\  \frac{c}{d} \right\ $
Floor and ceiling functions:	<code>\left \lfloor \frac{a}{b} \right \rfloor \left \lceil \frac{c}{d} \right \rceil</code>	$\left\lfloor \frac{a}{b} \right\rfloor \left\lceil \frac{c}{d} \right\rceil$
Slashes and backslashes	<code>\left / \frac{a}{b} \right \backslash</code>	$\left/ \frac{a}{b} \right\backslash$
Up, down and up-down arrows	<code>\left \uparrow \frac{a}{b} \downarrow \Uparrow \frac{a}{b} \Downarrow \updownarrow \frac{a}{b} \Updownarrow</code>	$\uparrow \frac{a}{b} \downarrow \Uparrow \frac{a}{b} \Downarrow \updownarrow \frac{a}{b} \Updownarrow$
Delimiters can be mixed, as long as left and right match	<code>\left [ 0,1 \right )</code>	$[0,1)$
Use \left. and \right. if you don't want a delimiter to appear:	<code>\left. \frac{A}{B} \right\} \rightarrow X</code>	$\left. \frac{A}{B} \right\} \rightarrow X$
	<code>\big( \Big( \bigg( \Bigg( \dots \Biggg] \biggg] \Bigg] \bigg] \Big] \big] \leftarrow</code>	$(((((\dots)])))])$
	<code>\big\{ \Big\{ \bigg\{ \Bigg\{ \dots \Biggg\} \biggg\} \Bigg\} \bigg\} \Big\} \big\} \leftarrow</code>	$\{\{\{\{\dots\}\}\}\}\}$
Size of the delimiters	<code>\big  \Big  \bigg  \Bigg  \dots \Biggg  \biggg  \Bigg  \bigg  \Big  \big </code>	$          \dots        $
	<code>\big\lfloor \Big\lfloor \bigg\lfloor \Bigg\lfloor \dots \Biggg\rfloor \biggg\rfloor \Bigg\rfloor \bigg\rfloor \Big\rfloor \big\rfloor</code>	$\lfloor \lfloor \lfloor \lfloor \dots \rfloor \rfloor \rfloor \rfloor$
	<code>\big\uparrow \Big\uparrow \bigg\uparrow \Bigg\uparrow \dots \Biggg\Downarrow \biggg\Downarrow \Bigg\Downarrow \bigg\Downarrow \Big\Downarrow \big\Downarrow</code>	$\uparrow \uparrow \uparrow \uparrow \dots \Downarrow \Downarrow \Downarrow \Downarrow$

```

\big\updownarrow
\Big\updownarrow
\bigg\updownarrow
\Bigg\updownarrow \dots
\Bigg\Updownarrow
\bigg\Updownarrow
\Big\Updownarrow
\big\Updownarrow

\big / \Big / \bigg / \Bigg /
\dots \Bigg\backslash
\bigg\backslash \Big\backslash
\big\backslash

```



## Alphabets and typefaces

Texvc cannot render arbitrary Unicode characters. Those it can handle can be entered by the expressions below. For others, such as Cyrillic, they can be entered as Unicode or HTML entities in running text, but cannot be used in displayed formulas.

### Greek alphabet

```

\Alpha \Beta \Gamma \Delta \Epsilon \Zeta
\Eta \Theta \Iota \Kappa \Lambda \Mu
\Nu \Xi \Pi \Rho \Sigma \Tau
\Upsilon \Phi \Chi \Psi \Omega
\alpha \beta \gamma \delta \epsilon \zeta
\eta \theta \iota \kappa \lambda \mu
\nu \xi \pi \rho \sigma \tau
\upsilon \phi \chi \psi \omega
\varepsilon \digamma \vartheta \varkappa
\varpi \varrho \varsigma \varphi

```

ΑΒΓΔΕΖ  
 ΗΘΙΚΛΜ  
 ΝΞΠΡΣΤ  
 ΥΦΧΨΩ  
 αβγδεζ  
 ηθικλμ  
 νξπρστ  
 υφχψω  
 εϛϞϫ  
 Ϙϙςφ

### Blackboard Bold/Scripts

```

\mathbb{A} \mathbb{B} \mathbb{C} \mathbb{D}
\mathbb{E} \mathbb{F} \mathbb{G}
\mathbb{H} \mathbb{I} \mathbb{J} \mathbb{K}
\mathbb{L} \mathbb{M}
\mathbb{N} \mathbb{O} \mathbb{P} \mathbb{Q}
\mathbb{R} \mathbb{S} \mathbb{T}
\mathbb{U} \mathbb{V} \mathbb{W} \mathbb{X}
\mathbb{Y} \mathbb{Z}

\C \N \Q \R \Z

```

ΑΒCDEFG  
 HIJKLM  
 NOPQRST  
 UVWXYZ  
 CNQRZ

### boldface (vectors)

```

\mathbf{A} \mathbf{B} \mathbf{C} \mathbf{D}
\mathbf{E} \mathbf{F} \mathbf{G}
\mathbf{H} \mathbf{I} \mathbf{J} \mathbf{K}
\mathbf{L} \mathbf{M}
\mathbf{N} \mathbf{O} \mathbf{P} \mathbf{Q}
\mathbf{R} \mathbf{S} \mathbf{T}

```

ΑΒCDEFG  
 HIJKLM  
 NOPQRST

$\mathbf{U}$   $\mathbf{V}$   $\mathbf{W}$   $\mathbf{X}$   
 $\mathbf{Y}$   $\mathbf{Z}$   
 $\mathbf{a}$   $\mathbf{b}$   $\mathbf{c}$   $\mathbf{d}$   
 $\mathbf{e}$   $\mathbf{f}$   $\mathbf{g}$   
 $\mathbf{h}$   $\mathbf{i}$   $\mathbf{j}$   $\mathbf{k}$   
 $\mathbf{l}$   $\mathbf{m}$   
 $\mathbf{n}$   $\mathbf{o}$   $\mathbf{p}$   $\mathbf{q}$   
 $\mathbf{r}$   $\mathbf{s}$   $\mathbf{t}$   
 $\mathbf{u}$   $\mathbf{v}$   $\mathbf{w}$   $\mathbf{x}$   
 $\mathbf{y}$   $\mathbf{z}$   
 $\mathbf{0}$   $\mathbf{1}$   $\mathbf{2}$   $\mathbf{3}$   
 $\mathbf{4}$   
 $\mathbf{5}$   $\mathbf{6}$   $\mathbf{7}$   $\mathbf{8}$   
 $\mathbf{9}$

**UVWXYZ**  
**abcdefg**  
**hijklm**  
**nopqrst**  
**vwxyz**  
**01234**  
**56789**

**Boldface (greek)**

$\boldsymbol{\Alpha}$   $\boldsymbol{\Beta}$   
 $\boldsymbol{\Gamma}$   $\boldsymbol{\Delta}$   
 $\boldsymbol{\Epsilon}$   $\boldsymbol{\Zeta}$   
 $\boldsymbol{\Eta}$   $\boldsymbol{\Theta}$   
 $\boldsymbol{\Iota}$   $\boldsymbol{\Kappa}$   
 $\boldsymbol{\Lambda}$   $\boldsymbol{\Mu}$   
 $\boldsymbol{\Nu}$   $\boldsymbol{\Xi}$   
 $\boldsymbol{\Pi}$   $\boldsymbol{\Rho}$   
 $\boldsymbol{\Sigma}$   $\boldsymbol{\Tau}$   
 $\boldsymbol{\Upsilon}$   $\boldsymbol{\Phi}$   
 $\boldsymbol{\Chi}$   $\boldsymbol{\Psi}$   
 $\boldsymbol{\Omega}$   
 $\boldsymbol{\alpha}$   $\boldsymbol{\beta}$   
 $\boldsymbol{\gamma}$   $\boldsymbol{\delta}$   
 $\boldsymbol{\epsilon}$   $\boldsymbol{\zeta}$   
 $\boldsymbol{\eta}$   $\boldsymbol{\theta}$   
 $\boldsymbol{\iota}$   $\boldsymbol{\kappa}$   
 $\boldsymbol{\lambda}$   $\boldsymbol{\mu}$   
 $\boldsymbol{\nu}$   $\boldsymbol{\xi}$   
 $\boldsymbol{\pi}$   $\boldsymbol{\rho}$   
 $\boldsymbol{\sigma}$   $\boldsymbol{\tau}$   
 $\boldsymbol{\upsilon}$   $\boldsymbol{\phi}$   
 $\boldsymbol{\chi}$   $\boldsymbol{\psi}$   
 $\boldsymbol{\omega}$   
 $\boldsymbol{\varepsilon}$   $\boldsymbol{\digamma}$   
 $\boldsymbol{\vartheta}$   $\boldsymbol{\varkappa}$   
 $\boldsymbol{\varpi}$   $\boldsymbol{\varrho}$   
 $\boldsymbol{\varsigma}$   $\boldsymbol{\varphi}$

**ΑΒΓΔΕΖ**  
**ΗΘΙΚΛΜ**  
**ΝΞΠΡΣΤ**  
**ΥΦΧΨΩ**  
**αβγδεζ**  
**ηθικλμ**  
**νξπρστ**  
**υφχψω**  
**εϛϜϝ**  
**ϞϟϠϡ**

**Italics**

$\mathit{A}$   $\mathit{B}$   $\mathit{C}$   $\mathit{D}$   
 $\mathit{E}$   $\mathit{F}$   $\mathit{G}$   
 $\mathit{H}$   $\mathit{I}$   $\mathit{J}$   $\mathit{K}$   
 $\mathit{L}$   $\mathit{M}$   
 $\mathit{N}$   $\mathit{O}$   $\mathit{P}$   $\mathit{Q}$   
 $\mathit{R}$   $\mathit{S}$   $\mathit{T}$   
 $\mathit{U}$   $\mathit{V}$   $\mathit{W}$   $\mathit{X}$   
 $\mathit{Y}$   $\mathit{Z}$   
 $\mathit{a}$   $\mathit{b}$   $\mathit{c}$   $\mathit{d}$   
 $\mathit{e}$   $\mathit{f}$   $\mathit{g}$   
 $\mathit{h}$   $\mathit{i}$   $\mathit{j}$   $\mathit{k}$   
 $\mathit{l}$   $\mathit{m}$

*ABCDEFGH*  
*IJKLM*  
*NOPQRST*  
*UVWXYZ*  
*abcdefg*  
*hijklm*

$\backslash\mathit{n}$   $\backslash\mathit{o}$   $\backslash\mathit{p}$   $\backslash\mathit{q}$   
 $\backslash\mathit{r}$   $\backslash\mathit{s}$   $\backslash\mathit{t}$   
 $\backslash\mathit{u}$   $\backslash\mathit{v}$   $\backslash\mathit{w}$   $\backslash\mathit{x}$   
 $\backslash\mathit{y}$   $\backslash\mathit{z}$   
 $\backslash\mathit{0}$   $\backslash\mathit{1}$   $\backslash\mathit{2}$   $\backslash\mathit{3}$   
 $\backslash\mathit{4}$   
 $\backslash\mathit{5}$   $\backslash\mathit{6}$   $\backslash\mathit{7}$   $\backslash\mathit{8}$   
 $\backslash\mathit{9}$

*nopqrst*  
*vwxyz*  
*01234*  
*56789*

**Roman typeface**

$\backslash\mathrm{A}$   $\backslash\mathrm{B}$   $\backslash\mathrm{C}$   $\backslash\mathrm{D}$   
 $\backslash\mathrm{E}$   $\backslash\mathrm{F}$   $\backslash\mathrm{G}$   
 $\backslash\mathrm{H}$   $\backslash\mathrm{I}$   $\backslash\mathrm{J}$   $\backslash\mathrm{K}$   
 $\backslash\mathrm{L}$   $\backslash\mathrm{M}$   
 $\backslash\mathrm{N}$   $\backslash\mathrm{O}$   $\backslash\mathrm{P}$   $\backslash\mathrm{Q}$   
 $\backslash\mathrm{R}$   $\backslash\mathrm{S}$   $\backslash\mathrm{T}$   
 $\backslash\mathrm{U}$   $\backslash\mathrm{V}$   $\backslash\mathrm{W}$   $\backslash\mathrm{X}$   
 $\backslash\mathrm{Y}$   $\backslash\mathrm{Z}$   
 $\backslash\mathrm{a}$   $\backslash\mathrm{b}$   $\backslash\mathrm{c}$   $\backslash\mathrm{d}$   
 $\backslash\mathrm{e}$   $\backslash\mathrm{f}$   $\backslash\mathrm{g}$   
 $\backslash\mathrm{h}$   $\backslash\mathrm{i}$   $\backslash\mathrm{j}$   $\backslash\mathrm{k}$   
 $\backslash\mathrm{l}$   $\backslash\mathrm{m}$   
 $\backslash\mathrm{n}$   $\backslash\mathrm{o}$   $\backslash\mathrm{p}$   $\backslash\mathrm{q}$   
 $\backslash\mathrm{r}$   $\backslash\mathrm{s}$   $\backslash\mathrm{t}$   
 $\backslash\mathrm{u}$   $\backslash\mathrm{v}$   $\backslash\mathrm{w}$   $\backslash\mathrm{x}$   
 $\backslash\mathrm{y}$   $\backslash\mathrm{z}$   
 $\backslash\mathrm{0}$   $\backslash\mathrm{1}$   $\backslash\mathrm{2}$   $\backslash\mathrm{3}$   
 $\backslash\mathrm{4}$   
 $\backslash\mathrm{5}$   $\backslash\mathrm{6}$   $\backslash\mathrm{7}$   $\backslash\mathrm{8}$   
 $\backslash\mathrm{9}$

ABCDEFG  
 HIJKLM  
 NOPQRST  
 UVWXYZ  
 abcdefg  
 hijklm  
 nopqrst  
 uvwxyz  
 01234  
 56789

**Fraktur typeface**

$\backslash\mathfrak{A}$   $\backslash\mathfrak{B}$   $\backslash\mathfrak{C}$   
 $\backslash\mathfrak{D}$   $\backslash\mathfrak{E}$   $\backslash\mathfrak{F}$   
 $\backslash\mathfrak{G}$   
 $\backslash\mathfrak{H}$   $\backslash\mathfrak{I}$   $\backslash\mathfrak{J}$   
 $\backslash\mathfrak{K}$   $\backslash\mathfrak{L}$   $\backslash\mathfrak{M}$   
 $\backslash\mathfrak{N}$   $\backslash\mathfrak{O}$   $\backslash\mathfrak{P}$   
 $\backslash\mathfrak{Q}$   $\backslash\mathfrak{R}$   $\backslash\mathfrak{S}$   
 $\backslash\mathfrak{T}$   
 $\backslash\mathfrak{U}$   $\backslash\mathfrak{V}$   $\backslash\mathfrak{W}$   
 $\backslash\mathfrak{X}$   $\backslash\mathfrak{Y}$   $\backslash\mathfrak{Z}$   
 $\backslash\mathfrak{a}$   $\backslash\mathfrak{b}$   $\backslash\mathfrak{c}$   
 $\backslash\mathfrak{d}$   $\backslash\mathfrak{e}$   $\backslash\mathfrak{f}$   
 $\backslash\mathfrak{g}$   
 $\backslash\mathfrak{h}$   $\backslash\mathfrak{i}$   $\backslash\mathfrak{j}$   
 $\backslash\mathfrak{k}$   $\backslash\mathfrak{l}$   $\backslash\mathfrak{m}$   
 $\backslash\mathfrak{n}$   $\backslash\mathfrak{o}$   $\backslash\mathfrak{p}$   
 $\backslash\mathfrak{q}$   $\backslash\mathfrak{r}$   $\backslash\mathfrak{s}$   
 $\backslash\mathfrak{t}$   
 $\backslash\mathfrak{u}$   $\backslash\mathfrak{v}$   $\backslash\mathfrak{w}$   
 $\backslash\mathfrak{x}$   $\backslash\mathfrak{y}$   $\backslash\mathfrak{z}$   
 $\backslash\mathfrak{0}$   $\backslash\mathfrak{1}$   $\backslash\mathfrak{2}$   
 $\backslash\mathfrak{3}$   $\backslash\mathfrak{4}$   
 $\backslash\mathfrak{5}$   $\backslash\mathfrak{6}$   $\backslash\mathfrak{7}$   
 $\backslash\mathfrak{8}$   $\backslash\mathfrak{9}$

𝔸𝔹𝔼𝔻𝔼𝔽𝔾  
 ℋℐℑℓℓ  
 𝓃𝓄𝓅𝓆𝓇𝓈𝓉  
 𝓊𝓋𝓌𝓍𝓎𝓏  
 abcdefg  
 hijklm  
 nopqrst  
 uvwxyz  
 01234  
 56789

**Calligraphy/Script**

<code>\mathcal{A}</code>	<code>\mathcal{B}</code>	<code>\mathcal{C}</code>	<code>\mathcal{D}</code>	<i>ABCDEF</i>
<code>\mathcal{E}</code>	<code>\mathcal{F}</code>	<code>\mathcal{G}</code>		<i>GH</i>
<code>\mathcal{H}</code>	<code>\mathcal{I}</code>	<code>\mathcal{J}</code>	<code>\mathcal{K}</code>	<i>HIJKLM</i>
<code>\mathcal{L}</code>	<code>\mathcal{M}</code>			
<code>\mathcal{N}</code>	<code>\mathcal{O}</code>	<code>\mathcal{P}</code>	<code>\mathcal{Q}</code>	<i>NOPQRST</i>
<code>\mathcal{R}</code>	<code>\mathcal{S}</code>	<code>\mathcal{T}</code>		
<code>\mathcal{U}</code>	<code>\mathcal{V}</code>	<code>\mathcal{W}</code>	<code>\mathcal{X}</code>	<i>UVWXYZ</i>
<code>\mathcal{Y}</code>	<code>\mathcal{Z}</code>			

**Hebrew**

<code>\aleph</code>	<code>\beth</code>	<code>\gimel</code>	<code>\daleth</code>	א ב ג ד
---------------------	--------------------	---------------------	----------------------	---------

Feature	Syntax		How it looks rendered
non-italicised characters	<code>\mbox{abc}</code>	abc	abc
mixed italics (bad)	<code>\mbox{if} n</code> <code>\mbox{is even}</code>	if <i>n</i> is even	if <i>n</i> is even
mixed italics (good)	<code>\mbox{if</code> <code>}n\mbox{ is</code> <code>even}</code>	if <i>n</i> is even	if <i>n</i> is even
mixed italics (more legible: ~ is a non-breaking space, while "\ " forces a space)	<code>\mbox{if}~n\</code> <code>\mbox{is even}</code>	if <i>n</i> is even	if <i>n</i> is even if <i>n</i> is even

## Color

Equations can use color:

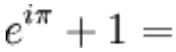
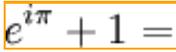
- `{\color{Blue}x^2}+{\color{YellowOrange}2x}-{\color{OliveGreen}1}`

$$x^2 + 2x - 1$$

- `x_{1,2}=\frac{-b\pm\sqrt{\color{Red}b^2-4ac}}{2a}`

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

It is also possible to change the background color, as in the following example:

Background	Wikicode	Rendering (in PNG)
White	<code>e^{i \pi} + 1 = 0</code> <code>\definecolor{orange}{RGB}{255,165,0}\pagecolor{orange}e^{i \pi} + 1 = 0</code>	 
Orange	<code>e^{i \pi} + 1 = 0</code> <code>\definecolor{orange}{RGB}{255,165,0}\pagecolor{orange}e^{i \pi} + 1 = 0</code>	 

See here for [all named colors](#) supported by LaTeX.

Note that color should not be used as the *only* way to identify something, because it will become meaningless on black-and-white media or for color-blind people.

## Formatting issues

### Spacing

Note that TeX handles most spacing automatically, but you may sometimes want manual control.

Feature	Syntax	How it looks rendered
double quad space	<code>a \qqquad b</code>	$a \quad b$
quad space	<code>a \quad b</code>	$a \quad b$
text space	<code>a\ b</code>	$a b$
text space without PNG conversion	<code>a \mbox{ } b</code>	$a b$
large space	<code>a\;b</code>	$a b$
medium space	<code>a\&gt;b</code>	[not supported]
small space	<code>a\,b</code>	$a b$

no space	ab	<i>ab</i>
small negative space	a\!b	<i>ab</i>

Automatic spacing may be broken in very long expressions (because they produce an overfull hbox in TeX):

```
<math>0+1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+16+17+18+19+20\cdots</math>
```

This can be remedied by putting a pair of braces { } around the whole expression:

```
<math>\{0+1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+16+17+18+19+20\cdots\}</math>
```

## Alignment with normal text flow

Due to the default css

```
img.tex { vertical-align: middle; }
```

an inline expression like  $\int_{-N}^N e^x dx$  should look good.

If you need to align it otherwise, use `<math style="vertical-align:-100%;">...</math>` and play with the `vertical-align` argument until you get it right; however, how it looks may depend on the browser and the browser settings.

Also note that if you rely on this workaround, if/when the rendering on the server gets fixed in future releases, as a result of this extra manual offset your formulae will suddenly be aligned incorrectly. So use it sparingly, if at all.

## Forced PNG rendering

To force the formula to render as PNG, add `\,` (small space) at the end of the formula (where it is not rendered). This will force PNG if the user is in "HTML if simple" mode, but not for "HTML if possible" mode (math rendering settings in [preferences](#)).

You can also use `\,\!` (small space and negative space, which cancel out) anywhere inside the math tags. This *does* force PNG even in "HTML if possible" mode, unlike `\,`.

This could be useful to keep the rendering of formulae in a proof consistent, for example, or to fix formulae that render incorrectly in HTML (at one time,  $a^{\{2+2\}}$  rendered with an extra underscore), or to demonstrate how something is rendered when it would normally show up as HTML (as in the examples above).

For instance:

Syntax	How it looks rendered
<code>a^{c+2}</code>	$a^{c+2}$
<code>a^{c+2} \,</code>	$a^{c+2}$
<code>a^{\\,\\!c+2}</code>	$a^{c+2}$
<code>a^{b^{c+2}}</code>	$a^{b^{c+2}}$ (WRONG with option "HTML if possible or else PNG!")
<code>a^{b^{c+2}} \,</code>	$a^{b^{c+2}}$ (WRONG with option "HTML if possible or else PNG!")
<code>a^{b^{c+2}}\approx 5</code>	$a^{b^{c+2}} \approx 5$ (due to " $\approx$ " correctly displayed, no code " $\,\!$ " needed)
<code>a^{b^{\\,\\!c+2}}</code>	$a^{b^{c+2}}$
<code>\int_{-N}^N e^x \,</code> <code>dx</code>	$\int_{-N}^N e^x dx$

This has been tested with most of the formulae on this page, and seems to work perfectly.

You might want to include a comment in the HTML so people don't "correct" the formula by removing it:

*<!-- The \\,\\! is to keep the formula rendered as PNG instead of HTML. Please don't remove it.-->*

## Examples

### Quadratic Polynomial

$$ax^2 + bx + c = 0 \quad \langle \text{math} \rangle ax^2 + bx + c = 0 \langle / \text{math} \rangle$$

### Quadratic Polynomial (Force PNG Rendering)

$$ax^2 + bx + c = 0$$
$$\langle \text{math} \rangle ax^2 + bx + c = 0 \langle / \text{math} \rangle$$

### Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
$$\langle \text{math} \rangle x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \langle / \text{math} \rangle$$

### Tall Parentheses and Fractions

$$2 = \left( \frac{(3-x) \times 2}{3-x} \right)$$
$$\langle \text{math} \rangle 2 = \left( \frac{\left( \frac{(3-x) \times 2}{3-x} \right)}{\right) \langle / \text{math} \rangle$$

$$S_{\text{new}} = S_{\text{old}} - \frac{(5-T)^2}{2}$$
$$\langle \text{math} \rangle S_{\text{new}} = S_{\text{old}} - \frac{(5-T)^2}{2} \langle / \text{math} \rangle$$

### Integrals

$$\int_a^x \int_a^s f(y) dy ds = \int_a^x f(y)(x-y) dy$$
$$\langle \text{math} \rangle \int_a^x \int_a^s f(y) dy ds = \int_a^x f(y)(x-y) dy \langle / \text{math} \rangle$$

### Summation

$$\sum_{m=1}^{\infty} \sum_{n=1}^{\infty} \frac{m^2 n}{3^m (m 3^n + n 3^m)}$$
$$\langle \text{math} \rangle \sum_{m=1}^{\infty} \sum_{n=1}^{\infty} \frac{m^2 n}{3^m (m 3^n + n 3^m)} \langle / \text{math} \rangle$$

## Differential Equation

$$u'' + p(x)u' + q(x)u = f(x), \quad x > a$$

`<math>u'' + p(x)u' + q(x)u=f(x),\quad x>a</math>`

## Complex numbers

$$|\bar{z}| = |z|, \quad |(\bar{z})^n| = |z|^n, \quad \arg(z^n) = n \arg(z)$$

`<math>|\bar{z}| = |z|, \quad |(\bar{z})^n| = |z|^n, \quad \arg(z^n) = n \arg(z)</math>`

## Limits

$$\lim_{z \rightarrow z_0} f(z) = f(z_0)$$

`<math>\lim_{z \rightarrow z_0} f(z) = f(z_0)</math>`

## Integral Equation

$$\phi_n(\kappa) = \frac{1}{4\pi^2 \kappa^2} \int_0^\infty \frac{\sin(\kappa R)}{\kappa R} \frac{\partial}{\partial R} \left[ R^2 \frac{\partial D_n(R)}{\partial R} \right] dR$$

`<math>\phi_n(\kappa) = \frac{1}{4\pi^2 \kappa^2} \int_0^\infty \frac{\sin(\kappa R)}{\kappa R} \frac{\partial}{\partial R} \left[ R^2 \frac{\partial D_n(R)}{\partial R} \right] dR</math>`

## Example

$$\phi_n(\kappa) = 0.033 C_n^2 \kappa^{-11/3}, \quad \frac{1}{L_0} \ll \kappa \ll \frac{1}{l_0}$$

`<math>\phi_n(\kappa) = 0.033 C_n^2 \kappa^{-11/3}, \quad \frac{1}{L_0} \ll \kappa \ll \frac{1}{l_0}</math>`

## Continuation and cases

$$f(x) = \begin{cases} 1 & -1 \leq x < 0 \\ \frac{1}{2} & x = 0 \\ 1 - x^2 & \text{otherwise} \end{cases}$$

`<math>f(x) = \begin{cases} 1 & -1 \leq x < 0 \\ \frac{1}{2} & x = 0 \\ 1 - x^2 & \text{otherwise} \end{cases}</math>`

## Prefixed subscript

$${}_pF_q(a_1, \dots, a_p; c_1, \dots, c_q; z) = \sum_{n=0}^{\infty} \frac{(a_1)_n \cdots (a_p)_n z^n}{(c_1)_n \cdots (c_q)_n n!}$$

`<math>{}_pF_q(a_1, \dots, a_p; c_1, \dots, c_q; z) = \sum_{n=0}^{\infty} \frac{(a_1)_n \cdots (a_p)_n z^n}{(c_1)_n \cdots (c_q)_n n!}</math>`

### Fraction and small fraction

$$\frac{a}{b} \quad \frac{a}{b}$$

`<math>\frac{a}{b} \quad \frac{a}{b}</math>`

# Footnotes

## Notes gathered at a single position

This method gathers the notes at a single position marked with the `<references/>` tag. If used multiple times, only the first works.

- `<ref>Reference text</ref>`

Produces a reference mark linking to the reference text, provided that the tag `<references/>` mentioned below is present on the page.

- `<ref name="id">Reference text</ref>`

Ditto; also assigns a name to the reference text; the quotes are only needed if *id* contains spaces or special characters.

- `<ref name="id" />`

Produces a reference mark linking to a reference text defined before.

- `<references/>`

Inserts a list of reference texts, each preceded by a list of links to the positions in the page linking to the text; this applies for all texts inside `<ref>` tags in the wikitext of the page. A blank is needed before the backslash.

## Multiple insertion of the same reference

References may be cited more than once using `<ref name="id" />`. On the Edit page, this is placed at the first insertion point of citation:

```
<ref name="Perry">Perry's Handbook, Sixth Edition, McGraw-Hill Co., 1984.</ref>
```

This is placed at the second insertion point of citation:

```
<ref name="Perry" />
```

This is placed at the third insertion point of citation:

```
<ref name="Perry" /> ..... and so forth for further insertion points
```

## Single insertion of a reference

For the single insertion of a reference, the "name" parameter is not needed. On the Edit page, this is placed at the insertion point of citation:

```
<ref>Excel For Dummies, First Edition, Hungry Minds, Inc., 1980.</ref>
```

To have the reference depend on a parameter, use e.g.:

```
{{#tag:ref|...{{tc}}...{{{1}}}} giving 11
```

## What is produced at the points of insertion

The `<ref>` tags in the main text are converted to auto-numbered superscripts, like this:

The only reference to Excel For Dummies.<sup>[2]</sup>  
The first reference to Perry's Handbook.<sup>[3]</sup>  
The second reference to Perry's Handbook.<sup>[3]</sup>  
The third reference to Perry's Handbook.<sup>[3]</sup>  
[Help:Footnotes/demo/ref](#)

Clicking on a numbered superscript takes you straight to the text of the corresponding footnote or reference.

## Producing the reference or footnote list

The `<references/>` tag is expanded to show the text of the footnotes or references against their corresponding numbers, like this:

1. <sup>^</sup> ...in...{{{1}}}
2. <sup>^</sup> Excel For Dummies, First Edition, Hungry Minds, Inc., 1980.
3. <sup>^ a b c</sup> Perry's Handbook, Sixth Edition, McGraw-Hill Co., 1984.