

karnaugh-map manual

Introduction

The karnaugh-map package allows for implementing Karnaugh maps, also known as K-maps, within Typst. The package allows the creation of 2-variable (2 by 2), 3-variable (2 by 4), and 4-variable (4 by 4) Karnaugh maps.

Usage

To add a Karnaugh map, use the `karnaugh()` function.

Function Parameters

Parameter	Description	Example
variables array	The array of variables for the Karnaugh map. Between two and four variables may be provided, with the size of the Karnaugh map being automatically determined by the number of variables.	<code>("A", "B")</code>
manual-terms array	The array of terms for the Karnaugh map, such as "0" or "1". Terms are displayed in the Karnaugh map in order of the array, top-to-bottom, left-to-right. Note that this is dissimilar to some LaTeX Karnaugh map packages. There must be exactly enough terms for the corresponding Karnaugh map size; i.e. a 2-variable map must have 4 terms; a 3-variable map must have 8 terms; a 4-variable map must have 16 terms.	<code>("0", "1", "1", "X")</code>
implicants array	The array of implicants for the Karnaugh map. Each element is itself an array of all cells within the implicant.	<code>((1, 3), (2, 3))</code>
cell-size length	The size of each cell within the Karnaugh map. Default: 20pt	25pt
stroke length	The width of the Karnaugh map's strokes. Default: 0.5pt	1pt

Parameter	Description	Example
colors array	<p>The array of colors to be used for implicants in the Karnaugh map.</p> <p>Each element in the array is an array of three RGB integers. The first implicant will use the first color in the array, the second implicant the second color, and so on.</p> <p>There must be at least as many colors as there are implicants.</p> <p>Default: red, green, blue, yellow, cyan, magenta (cycled twice)</p>	<pre>// Sets colors to cycle // between red, green, // and blue ten times. ((255, 0, 0, 0, 255, 0, 0, 0, 255) * 10).chunks(3)</pre>
alpha int	<p>The alpha value of the colors in the Karnaugh map.</p> <p>Default: 120</p>	80

Cell Numbers

Cells in karnaugh-map are numbered top-to-bottom, left-to-right, starting at cell 0 (top-left). Note that the cell numbers do *not* correspond to the decimal values of the Gray code state the cell represents.

	0	1
0	0	1
1	2	3

	0	1
00	0	1
01	2	3
11	4	5
10	6	7

	00	01	11	10
00	0	1	2	3
01	4	5	6	7
11	8	9	10	11
10	12	13	14	15

Examples

		Q_{t-}	
		0	1
RS	00	0	1
	01	1	1
	11	0	0
	10	X	X

```
#karnaugh(
  variables: ($R$, $S$, $Q_{t-}$),
  manual-terms: (
    "0", "1",
    "1", "1",
    "0", "0",
    "X", "X"
  ),
  implicants: ((0, 6), (4, 5, 6, 7))
)
```

		<i>CD</i>			
		00	01	11	10
<i>AB</i>	00	0	0	0	0
	01	1	1	1	1
	11	0	1	1	1
	10	0	1	0	0

```
#karnaugh(
  variables: ($A$, $B$, $C$, $D$),
  manual-terms: (
    "0", "0", "0", "0",
    "1", "1", "1", "1",
    "0", "1", "1", "1",
    "0", "1", "0", "0"
  ),
  implicants: ((4, 5, 6, 7), (9, 13), (6, 7, 10, 11))
)
```