PSTricks

pst-tools

Helper functions; v.0.04

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Contents

1 \psPrintValue

This macro allows to print single values of a math function. It has the syntax

```
\psPrintValue [Options] {PostScript code}
\psPrintValue [algebraic,...] {x value, algebraic code}
```

Important is the fact, that \psPrintValue works on PostScript side. For TeX it is only a box of zero dimension. This is the reason why you have to put it into a box, which reserves horizontal space.

There are the following valid options for \psPrintValue:

name	value	default	
PSfont	PS font name	Times	only valid PostScriptfont names are possible, e.g. Times-Roman, Helvetica, Courier, AvantGard, Bookman
postString	<string>	{}	will be appended to the number string
trimSpaces	<boolean>	false	will strip spaces on the right
fontscale	<number>	10	the font scale in pt
valuewidth	<number>	10	the width of the string for the converted real number; if it is too small, no value is printed
decimals	<number>	-1	the number of printed decimals, a negative value prints all possible digits.
xShift	<number>	0	the x shift in pt for the output, relative to the current point.
algebraic	<boolean>	false	function in algebraic notation.
VarName	<string>	{}	saves the value in /<VarName> for further use

x(deg)	$\sin x$	$\cos x$	$\sqrt{x}$	$\sin x + \cos x$	$\sin^2 x + \cos^2 x$
0	0,0	1,0	0,0	1,0	1,0
10	0,173648	0,984	3,16228	1,15846	1,0
20	0,34202	0,939	4,47214	1,28171	1,0
30	0,5	0,866	5,47723	1,36603	1,0
40	0,642788	0,766	6,32456	1,40883	1,0
50	0,766044	0,642	7,07107	1,40883	1,0
60	0,866025	0,5	7,74597	1,36603	1,0
70	0,939693	0,342	8,3666	1,28171	1,0
80	0,984808	0,173	8,94427	1,15846	1,0
90	1,0	0,0	9,48683	1,0	1,0

100	0,984808	-0,173	10,0	0,81116	1,0
110	0,939693	-0,342	10,4881	0,597672	1,0
120	0,866025	-0,5	10,9545	0,366025	1,0
130	0,766044	-0,642	11,4018	0,123257	1,0
140	0,642788	-0,766	11,8322	-0,123257	1,0
150	0,5	-0,866	12,2474	-0,366025	1,0
160	0,34202	-0,939	12,6491	-0,597672	1,0
170	0,173648	-0,984	13,0384	-0,81116	1,0

```
1  \psset{fontscale=12}
2  \makebox[2em]{x(deg)} \makebox[5em]{$\sin x$} \makebox[4em]{$\cos x$}\hspace{1em}
3  \makebox[5em]{$\sqrt x$}\makebox[7em]{$\sin x+\cos x$}\makebox[6em]{$\sin^2 x+\cos^2 x
     $}\\[3pt]
4  \multido{\iA=0+10}{18}{
5    \makebox[1em]{\iA}
6    \makebox[5em]{\psPrintValue[PSfont=Helvetica,xShift=-10]{\iA\space sin}}
7    \makebox[4em][r]{\psPrintValue[PSfont=Courier,fontscale=10,decimals=3,xShift=-20]{\iA
       \space cos}}\hspace{1em}
8    \makebox[5em]{\psPrintValue[dot,valuewidth=15,linecolor=blue,PSfont=AvantGarde]{\iA\
       space sqrt}}
9    \makebox[7em]{\psPrintValue[PSfont=Times-Italic]{\iA\space dup sin exch cos add}}
10   \makebox[6em]{\psPrintValue[PSfont=Palatino-Roman]{\iA\space dup sin dup mul exch cos
       dup mul add}}\\}
```

With enabled `algebraic` option there must be two arguments, separated by a comma. The first one is the x value as a number, which can also be PostScript code, which leaves a number on the stack. The second part is the function described in algebraic notation. Pay attention, in algebraic notation angles must be in radian and not degrees.

x(deg)	$\sin x$	$\cos x$	$\sqrt{x}$	$\sin x + \cos x$	$\sin^2 x + \cos^2 x$
0.0	0,0	1,0	0,0	1,0	1,0
0.1	0,0998334	0,995	0,316228	1,09484	1,0
0.20001	0,198679	0,98	0,447225	1,17874	1,0
0.30002	0,295539	0,955	0,547741	1,25087	1,0
0.40002	0,389437	0,921	0,632471	1,31049	1,0
0.50003	0,479452	0,877	0,707128	1,35702	1,0
0.60004	0,564675	0,825	0,774622	1,38999	1,0
0.70004	0,644248	0,764	0,836684	1,40906	1,0
0.80005	0,717391	0,696	0,894455	1,41406	1,0
0.90005	0,783358	0,621	0,94871	1,40493	1,0
1.00006	0,841503	0,54	1,00003	1,38176	1,0
1.10007	0,891239	0,453	1,04884	1,34477	1,0
1.20007	0,932064	0,362	1,09548	1,29436	1,0
1.30008	0,96358	0,267	1,14021	1,231	1,0
1.40009	0,985465	0,169	1,18325	1,15534	1,0
1.50009	0,997501	0,07	1,22478	1,06815	1,0
1.6001	0,999571	-0,029	1,26495	0,970271	1,0
1.7001	0,991652	-0,128	1,30388	0,862708	1,0

```
1 \psset{algebraic, fontscale=12}% All functions now in algebraic notation
2 \makebox[2em]{x(deg)} \makebox[5em]{$\sin x$} \makebox[4em]{$\cos x$}\hspace{1em}
3 \makebox[5em]{$\sqrt x$}\makebox[7em]{$\sin x+\cos x$}\makebox[6em]{$\sin^2 x+\cos^2 x
    $}\\[3pt]
4 \multido{\rA=0+0.1}{18}{\makebox[1em]{\rA}
5   \makebox[5em]{\psPrintValue[PSfont=Helvetica,xShift=-10]{\rA, sin(x)}}
6   \makebox[4em][r]{\psPrintValue[PSfont=Courier,fontscale=10,decimals=3,xShift=-20]{\rA
      ,cos(x)}}\hspace{1em}
7   \makebox[5em]{\psPrintValue[dot,valuewidth=15,linecolor=blue,PSfont=AvantGarde]{\rA,
      sqrt(x)}}
8   \makebox[7em]{\psPrintValue[PSfont=Times-Italic]{\rA,sin(x)+cos(x)}}
9   \makebox[6em]{\psPrintValue[PSfont=Palatino-Roman]{\rA,sin(x)^2+cos(x)^2}}\\}
```

<div align="center">

foo 3,1 bar

3pt foo 3,1° bar

3pt foo 9,8596° bar

</div>

```
1 foo \makebox[2em][l]{\psPrintValue[dot]{3.14 10 mul round 10 div}}bar\\3pt
2 foo \makebox[2em][l]{\psPrintValue[dot,PSfont=Symbol,
3   postString=\string\260]{3.14 10 mul round 10 div}}bar\\3pt
4 foo \makebox[3.5em][l]{\psPrintValue[dot,PSfont=Symbol,decimals=6,
5   postString=\string\260]{3.14 dup mul}}bar
```

2 List of all optional arguments for `pst-tools`

Key	Type	Default
dot	boolean	true
trimSpaces	boolean	true
xShift	ordinary	0
yShift	ordinary	0
postString	ordinary	
VarName	ordinary	
PSfont	ordinary	Times-Roman
valuewidth	ordinary	10
fontscale	ordinary	10
decimals	ordinary	-1
round	boolean	true
science	boolean	true

References

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