

PSTricks

pst-tools

Helper functions; v.0.06

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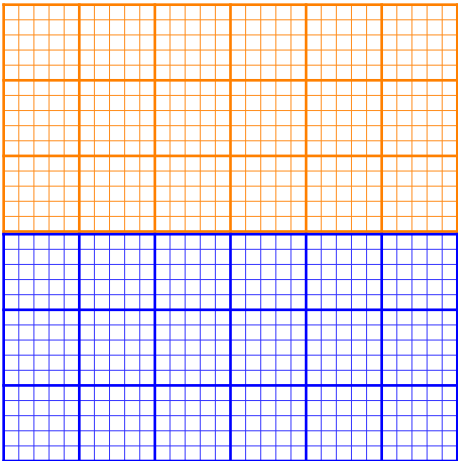
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1 Predefined styles

The style mmpaper is defined for \psgrid:

```
\begin{pspicture}(6,3)
\psgrid[style=mmpaper](6,3)
\end{pspicture}

\begin{pspicture}(6,3)
\psgrid[style=mmpaper,
  gridcolor=blue,subgridcolor=blue!80](6,3)
\end{pspicture}
```



2 \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 T_EX 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, Helvetica, 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
comma	<boolean>	false	comma instead of the dor for decimals

$x(\text{deg})$	$\sin x$	$\cos x$	\sqrt{x}	$\sin x + \cos x \sin^2 x + \cos^2 x$
0	0.0	1.0	0.0	1,0
10	0.173648	0.984	3.16228	1,15846
20	0.34202	0.939	4.47214	1,28171
30	0.5	0.866	5.47723	1,36603
40	0.642788	0.766	6.32456	1,40883
50	0.766044	0.642	7.07107	1,40883
60	0.866025	0.5	7.74597	1,36603
70	0.939693	0.342	8.3666	1,28171
80	0.984808	0.173	8.94427	1,15846
90	1.0	0.0	9.48683	1,0
100	0.984808	-0.173	10.0	0,81116
110	0.939693	-0.342	10.4881	0,597672
120	0.866025	-0.5	10.9545	0,366025
130	0.766044	-0.642	11.4018	0,123257
140	0.642788	-0.766	11.8322	-0,123257
150	0.5	-0.866	12.2474	-0,366025
160	0.34202	-0.939	12.6491	-0,597672
170	0.173648	-0.984	13.0384	-0,81116

```

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

$x(\text{deg})$	$\sin x$	$\cos x$	\sqrt{x}	$\sin x + \cos x \sin^2 x + \cos^2 x$
0.0	0.0	1.0	0.0	1,0
0.1	0.0998334	0.995	0.316228	1,09484
0.20001	0.198679	0.98	0.447225	1,17874
0.30002	0.295539	0.955	0.547741	1,25087
0.40002	0.389437	0.921	0.632471	1,31049
0.50003	0.479452	0.877	0.707128	1,35702
0.60004	0.564676	0.825	0.774622	1,38999
0.70004	0.644248	0.764	0.836684	1,40906
0.80005	0.717391	0.696	0.894455	1,41406
0.90005	0.783358	0.621	0.94871	1,40493
1.00006	0.841503	0.54	1.00003	1,38176

1.10007	0.891239	0.453	1.04884	<i>1,34477</i>	1.0
1.20007	0.932064	0.362	1.09548	<i>1,29436</i>	1.0
1.30008	0.96358	0.267	1.14021	<i>1,231</i>	1.0
1.40009	0.985465	0.169	1.18325	<i>1,15534</i>	1.0
1.50009	0.997501	0.07	1.22478	<i>1,06815</i>	1.0
1.6001	0.999571	-0.029	1.26495	<i>0,970271</i>	1.0
1.7001	0.991652	-0.128	1.30388	<i>0,862708</i>	1.0

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

foo 3,1 bar
 3pt foo 3,1° bar
 3pt foo 9.8596° bar

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

3 List of all optional arguments for pst-tools

Key	Type	Default
decimalSeparator	ordinary	.
comma	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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- [3] Alan Hoenig. *T_EX Unbound: L^AT_EX & T_EX Strategies, Fonts, Graphics, and More*. Oxford University Press, London, 1998.
- [4] Nikolai G. Kollock. *PostScript richtig eingesetzt: vom Konzept zum praktischen Einsatz*. IWT, Vaterstetten, 1989.
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- [8] Timothy Van Zandt. *PSTricks - PostScript macros for generic T_EX*. <http://www.tug.org/application/PSTricks>, 1993.
- [9] Timothy Van Zandt. *multido.tex - a loop macro, that supports fixed-point addition*. [CTAN:/graphics/pstricks/generic/multido.tex](http://CTAN.org/graphics/pstricks/generic/multido.tex), 1997.
- [10] Timothy Van Zandt and Denis Girou. Inside PSTricks. *TUGboat*, 15:239–246, September 1994.

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