

Conversion test

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1 Test worksheet

Test Sage worksheet to LaTeX conversion. This text is ragged left. Test Sage worksheet to LaTeX conversion. This text is ragged left. Test Sage worksheet to LaTeX conversion. This text is ragged left. Test Sage worksheet to LaTeX conversion. This text is ragged left. Test Sage worksheet to LaTeX conversion. This text is ragged left. Test Sage worksheet to LaTeX conversion. This text is ragged left. Test Sage worksheet to LaTeX conversion. This text is ragged left. Test Sage worksheet to LaTeX conversion. This text is ragged left. Test Sage worksheet to LaTeX conversion. This text is ragged left.

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Conversion script: sws2tex.py

$$\sum_{n=1}^{\infty} \frac{1}{n^2} = \frac{\pi^2}{6}$$

1.1 Python

Sage code

```
k = 0
for i in range(10):
    k += x^(-i)
show(k)
```

$$\frac{1}{x} + \frac{1}{x^2} + \frac{1}{x^3} + \frac{1}{x^4} + \frac{1}{x^5} + \frac{1}{x^6} + \frac{1}{x^7} + \frac{1}{x^8} + \frac{1}{x^9} + 1$$

1.2 LaTeX

Latex code

```
%latex
Some mathematics
\begin{enumerate}
\item  $\sum_{n=1}^{\infty} \frac{1}{n^2} = \frac{\pi^2}{6}$ 
\item  $1+1 = 2$ 
\end{enumerate}
```

Some mathematics

1. $\sum_{n=1}^{\infty} \frac{1}{n^2} = \frac{\pi^2}{6}$

2. $1 + 1 = 2$

1.3 Html

Some html Features

Fonts: **Bold**, *Italic*

Line

breaks

Horizontal lines

- Item
 - Lists
1. Numbered
 2. Lists

Nested Tags: This is **all *inside a html* x^2 link to the sage** website. Outside of link.

```
_____ Html code _____
%html
<p>
Some <strong>Html</strong>
This is the <a href="www.sagemath.org">Sage Website</a>.
</p>
```

Some **Html** This is the Sage Website.

1.4 Maxima

Unfortunately **Pygments** provides no **Syntax Highlighting for Maxima** code.

```
_____ Maxima code _____
%maxima
load(simplify_sum)$

a: sum(1/n^2,n,1,inf);
b: simplify_sum(a);
```

```
'sum(1/n^2,n,1,inf)
%pi^2/6
```

```
_____ Sage code _____
show(maxima('a'))
show(maxima('b'))
```

$$\sum_{n=1}^{\infty} \frac{1}{n^2}$$

$$\frac{\pi^2}{6}$$

1.5 Long Output

Sage code

```
pi.n(digits = 1000)
```

```
3.14159265358979323846264338327950288419716939937510582097494459230781640628620899862\
8034825342117067982148086513282306647093844609550582231725359408128481117450284102701\
9385211055596446229489549303819644288109756659334461284756482337867831652712019091456\
4856692346034861045432664821339360726024914127372458700660631558817488152092096282925\
4091715364367892590360011330530548820466521384146951941511609433057270365759591953092\
1861173819326117931051185480744623799627495673518857527248912279381830119491298336733\
6244065664308602139494639522473719070217986094370277053921717629317675238467481846766\
9405132000568127145263560827785771342757789609173637178721468440901224953430146549585\
3710507922796892589235420199561121290219608640344181598136297747713099605187072113499\
9999837297804995105973173281609631859502445945534690830264252230825334468503526193118\
8171010003137838752886587533208381420617177669147303598253490428755468731159562863882\
353787593751957781857780532171226806613001927876611195909216420199
```

Sage code

```
range(1, 10000, 100)
```

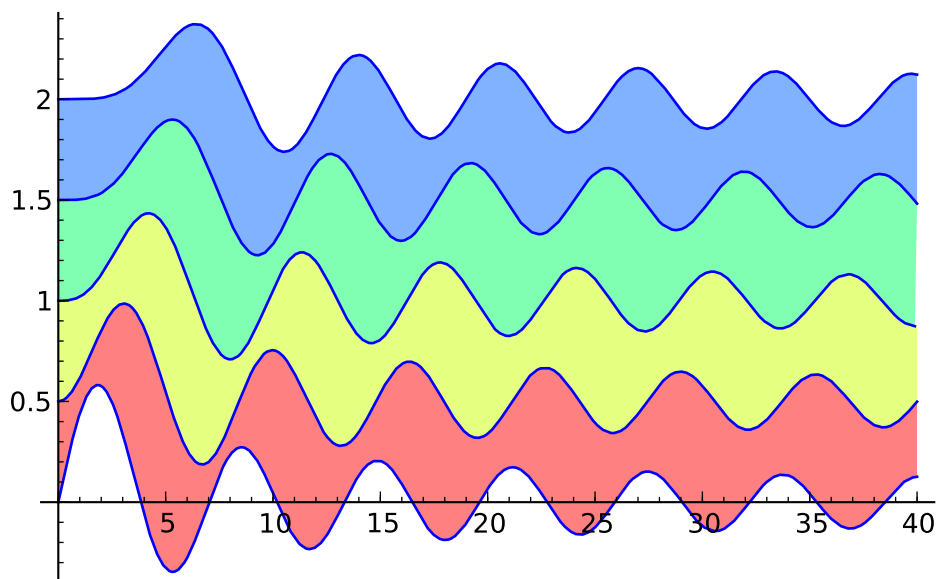
```
[1, 101, 201, 301, 401, 501, 601, 701, 801, 901, 1001, 1101, 1201, 1301, 1401, 1501, \
1601, 1701, 1801, 1901, 2001, 2101, 2201, 2301, 2401, 2501, 2601, 2701, 2801, 2901, 3\
001, 3101, 3201, 3301, 3401, 3501, 3601, 3701, 3801, 3901, 4001, 4101, 4201, 4301, 44\
01, 4501, 4601, 4701, 4801, 4901, 5001, 5101, 5201, 5301, 5401, 5501, 5601, 5701, 580\
1, 5901, 6001, 6101, 6201, 6301, 6401, 6501, 6601, 6701, 6801, 6901, 7001, 7101, 7201\
, 7301, 7401, 7501, 7601, 7701, 7801, 7901, 8001, 8101, 8201, 8301, 8401, 8501, 8601,\
8701, 8801, 8901, 9001, 9101, 9201, 9301, 9401, 9501, 9601, 9701, 9801, 9901]
```

1.6 Plotting

Sage code

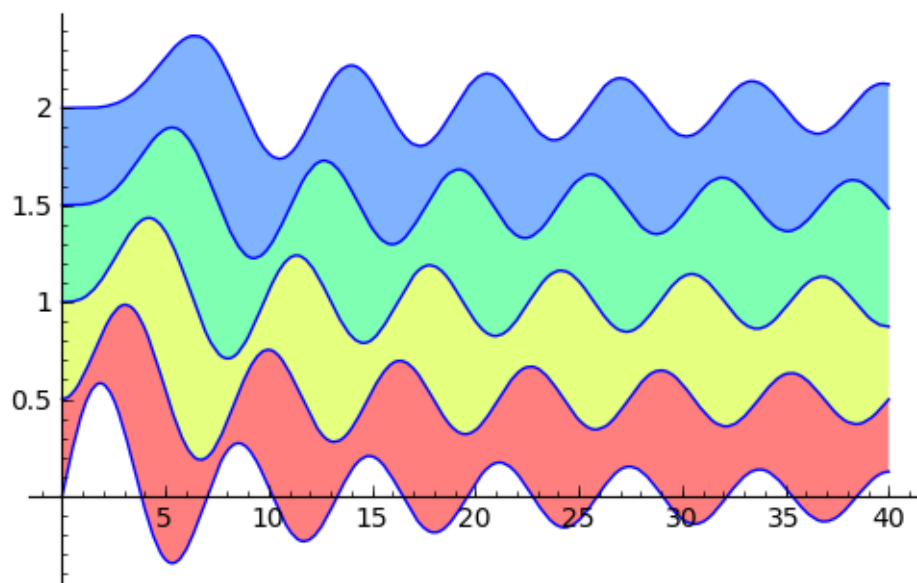
```
def b(n):
    return lambda x: bessell_J(n, x) + 0.5*(n-1)

fill = dict([(i, [i+1]) for i in [0..3]])
p = plot([b(c) for c in [1..5]], 0, 40, fill = fill)
# We save as PDF to get a better quality image
# in the LaTeX version of the worksheet
p.show(filename = "sage0.pdf")
```



The following plot is inserted as png.

```
p
```



1.7 HTML Tables

```
t = [['<span class="math">n</span>', '$\varphi(n)$'] + \
      [(n, euler_phi(n)) for n in [1..10]]]
html.table(t, header = True)
```

n	$\varphi(n)$
1	1
2	1
3	2
4	2
5	4
6	2
7	6
8	4
9	6
10	4

```
functions = [sin(x), cos(x), tan(x), acos(x)]
t = [[f, taylor(f, x, 0, 10)] for f in functions]
html.table(["Function", "Series"] + t, header = True)
```

Function	Series
$\sin(x)$	$\frac{1}{362880}x^9 - \frac{1}{5040}x^7 + \frac{1}{120}x^5 - \frac{1}{6}x^3 + x$
$\cos(x)$	$-\frac{1}{3628800}x^{10} + \frac{1}{40320}x^8 - \frac{1}{720}x^6 + \frac{1}{24}x^4 - \frac{1}{2}x^2 + 1$
$\tan(x)$	$\frac{62}{2835}x^9 + \frac{17}{315}x^7 + \frac{2}{15}x^5 + \frac{1}{3}x^3 + x$
$\arccos(x)$	$\frac{1}{2}\pi - \frac{35}{1152}x^9 - \frac{5}{112}x^7 - \frac{3}{40}x^5 - \frac{1}{6}x^3 - x$

Sage code

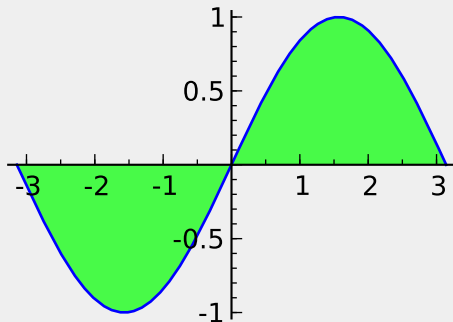
```

opts = {'fillcolor': "green",
        'fillalpha': 0.7,
        'figsize': [3,2],
        'transparent': True}

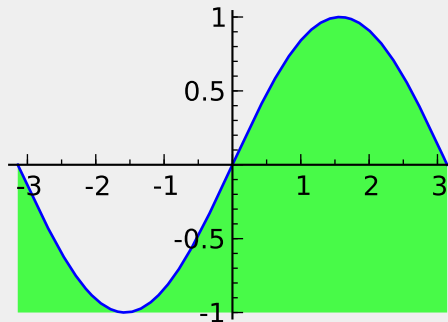
p1 = plot(sin(x), -pi, pi, fill = 'axis', filename='p1.pdf', **opts)
p2 = plot(sin(x), -pi, pi, fill = 'min', filename='p2.pdf', **opts)
p3 = plot(sin(x), -pi, pi, fill = 'max', filename='p3.pdf', **opts)
p4 = plot(sin(x), -pi, pi, fill = 0.5, filename='p4.pdf', **opts)
a = [['axis', 'min'], [p1, p2], ['max', 1/2], [p3, p4]]
html.table(a)

```

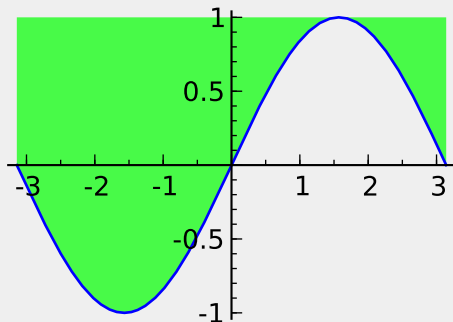
axis



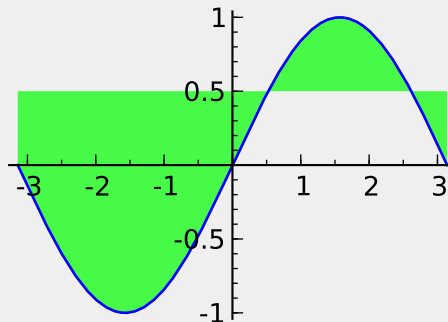
min



max



$\frac{1}{2}$



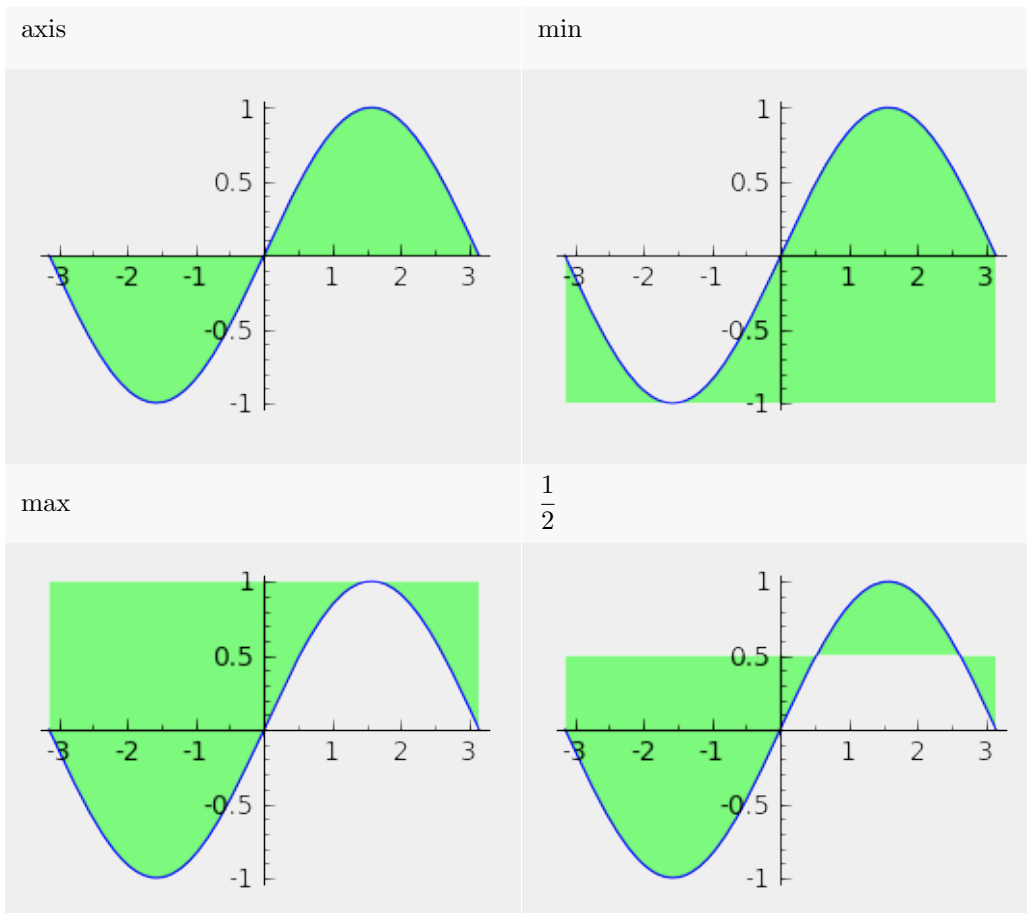
Sage code

```

p1 = plot(sin(x), -pi, pi, fill = 'axis', **opts)
p2 = plot(sin(x), -pi, pi, fill = 'min', **opts)
p3 = plot(sin(x), -pi, pi, fill = 'max', **opts)
p4 = plot(sin(x), -pi, pi, fill = 0.5, **opts)

```

```
a = [['axis', 'min'], [p1, p2], ['max', 1/2], [p3, p4]]
html.table(a)
```



We can insert web picture



and change its size:

We can also upload picture stored in DATA directory:

