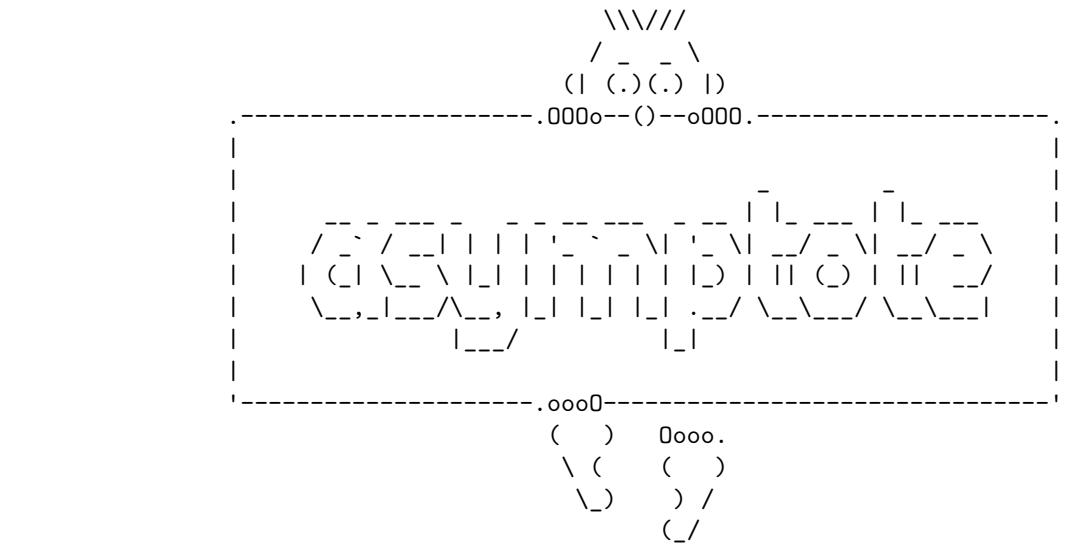


```
Codeblock class: asy

    sudo-apt-get install asymptote

    See http://asymptote.sourceforge.net/

    runs:
    > asy -o <fname>.{im_fmt} {im_opt} <fname>.asy

    class->cmd
      asy -> asy
      asymptote -> asy

Metadata options
    imagine.im_out: img,fcb
```

Notes:

- `settings.outformat=<fmt>` should match `im_fmt=<fmt>`-option.
- `settings.libgs="";` stops asy from passing `--libgs` to `dvisvgm`
- `svg` format seems to create an svg file that links to a `png` image, which shows up empty in a pdf after pandoc conversion.

Aymptote logo (pdf)

Figure 1: Logo

```
```{.asy im_fmt="pdf" caption="Logo"}
import three;
settings.libgs="";          // workaround for how asy calls dvisvgm
settings.outformat="pdf";
settings.render=1;

size(560,320,IgnoreAspect); // Fullsize
size3(140,80,15);
currentprojection=perspective(-2,20,10,up=Y);
currentlight=White;
viewportmargin=(0,10);

real a=-0.4;
real b=0.95;
real y1=-5;
real y2=-3y1/2;
path A=(a,0){dir(10)}::{dir(89.5)}(0,y2);
path B=(0,y1){dir(88.3)}::{dir(20)}(b,0);
real c=0.5*a;
pair z=(0,2.5);
transform t=scale(1,15);
transform T=inverse(scale(t.yy,t.xx));
path[] g=shift(0,1.979)*scale(0.01)*t*
```
```

```
  texpath(Label("{\it symptote}",z,0.25*E+0.169S,fontsize(24pt)));
pair w=(0,1.7);
pair u=intersectionpoint(A,w-1--w);

real h=0.25*linewidth();
real hy=(T*(h,h)).x;
g.push(t*((a,hy)--(b,hy)..(b+hy,0)..(b,-hy)--(a,-hy)..(a-hy,0)..cycle));
g.push(T*((h,y1)--(h,y2)..(0,y2+h)..(-h,y2)--(-h,y1)..(0,y1-h)..cycle));
g.push(shift(0,w.y)*t*((u.x,hy)--(w.x,hy)..(w.x+hy,0)..(w.x,-hy)--(u.x,-hy)..(u.x-hy,0)..cyc
real f=0.75;
g.push(point(A,0)--shift(-f*hy,f*h)*A--point(A,1)--shift(f*hy,-f*h)*reverse(A)--cycle);
g.push(point(B,0)--shift(f*hy,-f*h)*B--point(B,1)--shift(-f*hy,f*h)*reverse(B)--cycle);

triple H=-0.1Z;
material m=material(lightgray,shininess=1.0);

for(path p : g)
  draw(extrude(p,H),m);

surface s=surface(g);
draw(s,red,nolight);
draw(shift(H)*s,m);
```

Barnsley's fern (eps)

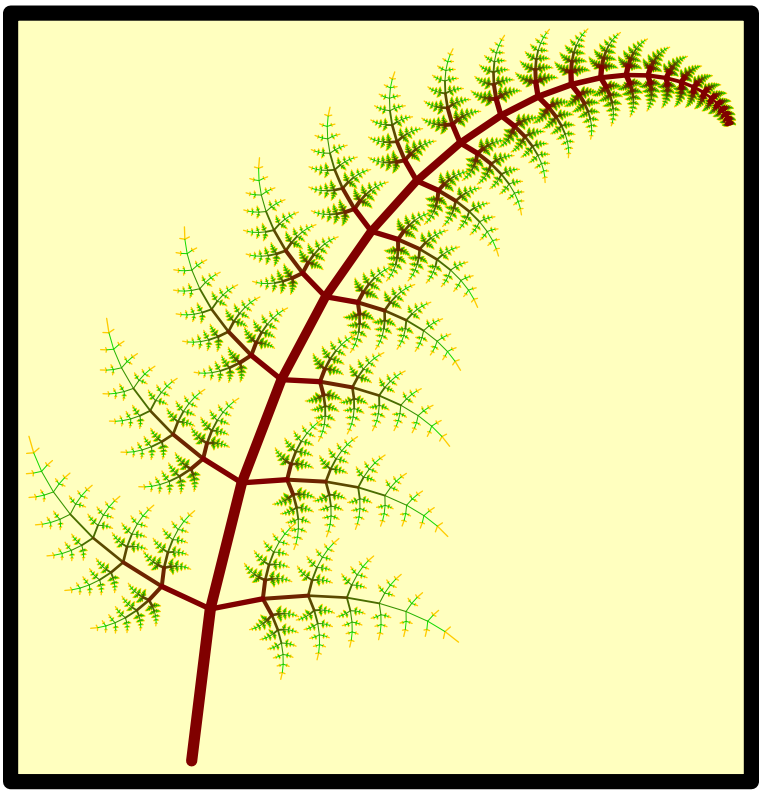


Figure 2: barnsley's fern

```
```{.asy im_fmt="eps" caption="barnsley's fern"}
// Barnsley's fern
// Fougère de Barnsley
size(10cm,0);

real ab=72, ac=-7;
real rc=0.85, rb=0.35;
path trk=(0,0)--(0,1);

transform ta=shift(0,1)*rotate(ab)*scale(rb);
transform tb=shift(0,1)*rotate(-ab)*scale(rb);
transform tc=shift(0,1)*rotate(ac)*scale(rc);
transform td=shift(0,1)*rotate((ab+ac)/2)*scale(rb);
transform te=shift(0,1)*rotate(-(ab+ac)/2)*scale(rb);

picture pic;
```
```

```
draw(pic,trk,red+.8green);

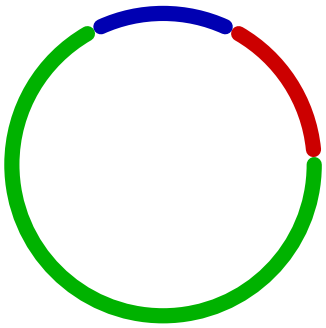
//Construct a fern branch as atractor
int nbit=7;
for(int i=1; i<=nbit; ++i) {
  picture pict;
  add(pict,ta*pic);
  add(pict,tb*pic);
  add(pict,tc*pic);
  draw(pict,(0,0)--(0,1), (2*(i/nbit)^2)*bp+((1-i/nbit)*green+i/nbit*brown));
  pic=pict;
}

//Use the fern branch to construct... a fern branch
picture pict;
add(pict,ta*pic);
add(pict,tb*pic);

pair x=(0,1);
nbit=23;
for(int i=1; i<=nbit; ++i) {
  add(shift(x)*rotate(ac*i)*scale(rc^i)*pict);
  draw(tc^i*((0,0)--(0,1)), 2*(1.5-i/nbit)^2*bp+brown);
  x=tc*x;
}

shipout(bbox(3mm, 2mm+black, FillDraw(paleyellow)));
```

Circle



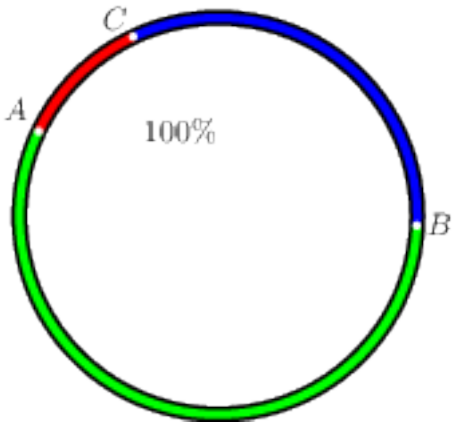
```{.asy im_fmt="eps"}
settings.outformat="eps";
import graph;

size(0,0);
pair O=0;

defaultpen(linewidth(2mm));
draw(arc(O,2cm,0,60),.8red,BeginPenMargin);
draw(arc(O,2cm,60,120),.7blue,PenMargins);
draw(arc(O,2cm,120,360),.7green);

```

Circle 2




```{.asy im_fmt="png"}
settings.outformat="png";
import geometry;
size(6cm);

// currentcoordsys=cartesiansystem((1,2),i=(1,0.5),j=(-0.5,.75));
// show(currentcoordsys, xpen=invisible);

point A=(-1,0);
point B=(3,-1);
point C=(0,1);
point D=(0,0);

circle cle=circle(A,C,B);
draw(cle,linewidth(2mm));

draw(arc(cle,A,B), dotsize()+green);
draw(arc(cle,B,C), dotsize()+blue);
draw(arc(cle,C,A), dotsize()+red);

dot(Label("$A$", black), A, 1.5NW, white);
dot(Label("$B$", black), B, E, white);
dot(Label("$C$", black), C, NW, white);
dot(Label("$100\%$", black), D, E, white);
```

2D example (png)

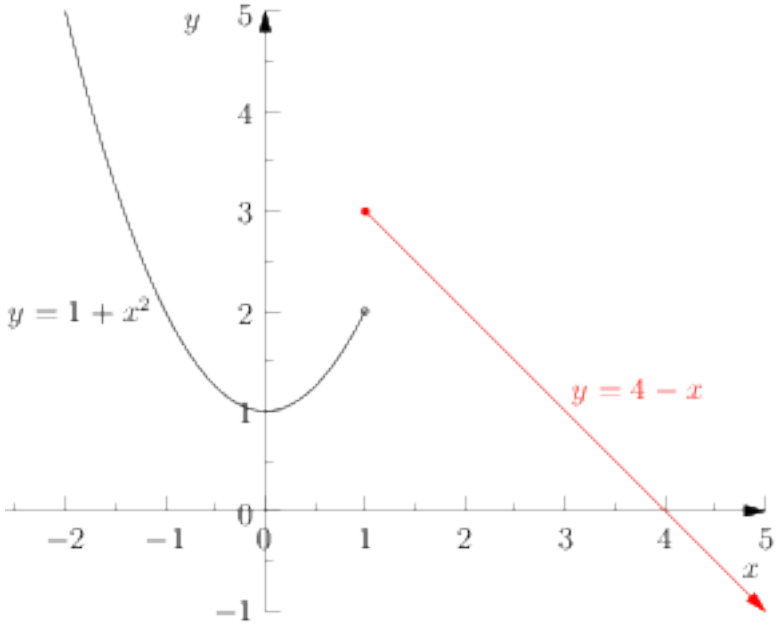


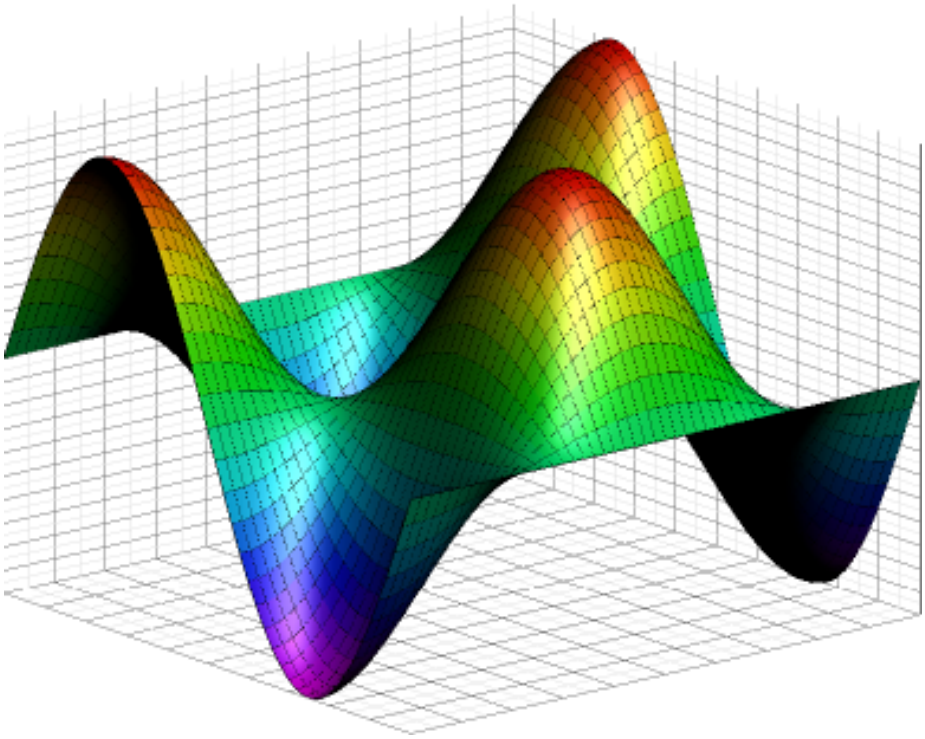
Figure 3: Created by Asymptote

```
```{.asy caption="Created by Asymptote"}
settings.outformat="png";
//settings.prc=false;
//settings.render=0;

import graph;
size(4inches,0);

real f1(real x) {return (1+x^2);}
real f2(real x) {return (4-x);}
xaxis("$x$",LeftTicks,Arrow);
yaxis("$y$",RightTicks,Arrow);
draw("$y=1+x^2$",graph(f1,-2,1));
dot((1,f1(1)),UnFill);
draw("$y=4-x$",graph(f2,1,5),LeftSide,red,Arrow);
dot((1,f2(1)),red);
```
```

3D example (png)



```asy
settings.outformat="png";  // im_fmt="png" by default

import graph3;
import grid3;
import palette;

currentprojection=orthographic(0.8,1,1);
size(400,300,IgnoreAspect);
defaultrender.merge=true;
real f(pair z) {return cos(2*pi*z.x)*sin(2*pi*z.y);}
surface s=surface(f,(-1/2,-1/2),(1/2,1/2),50,Spline);
draw(s,mean(palette(s.map(zpart),Rainbow(40))),black);
grid3(XYZgrid);
```

Documentation

asy -h

```
Asymptote version 2.41 [(C) 2004 Andy Hammerlindl, John C. Bowman, Tom Prince]
http://asymptote.sourceforge.net/
Usage: asy [options] [file ...]

Options (negate by replacing - with -no):

-V,-View                View output; command-line only
-a,-align C|B|T|Z       Center, Bottom, Top, or Zero page alignment [C]
-aligndir pair          Directional page alignment (overrides align) [(0,0)]
-antialias n            Antialiasing width for rasterized output [2]
-arcballradius pixels   Arcball radius [750]
-auto3D                 Automatically activate 3D scene [true]
-autobillboard          3D labels always face viewer by default [true]
-autoimport string      Module to automatically import
-autoplain              Enable automatic importing of plain [true]
-autoplay               Autoplay 3D animations [false]
-autorotate             Enable automatic PDF page rotation [false]
-axes3                  Show 3D axes in PDF output [true]
-batchMask              Mask fpu exceptions in batch mode [false]
-batchView              View output in batch mode [false]
-bw                     Convert all colors to black and white [false]
-cd directory           Set current directory; command-line only
-cmyk                   Convert rgb colors to cmyk [false]
-c,-command string      Command to autoexecute
-compact                Conserve memory at the expense of speed [false]
-d,-debug               Enable debugging messages [false]
-divisor n              Garbage collect using purge(divisor=n) [2]
-doubleclick ms         Emulated double-click timeout [200]
-embed                  Embed rendered preview image [true]
-exitonEOF              Exit interactive mode on EOF [true]
-fitscreen              Fit rendered image to screen [true]
-framedelay ms          Additional frame delay [0]
-framerate frames/s     Animation speed [30]
-globalwrite            Allow write to other directory [false]
-gray                   Convert all colors to grayscale [false]
-h,-help                Show summary of options; command-line only
-historylines n         Retain n lines of history [1000]
-iconify                Iconify rendering window [false]
-inlineimage            Generate inline embedded image [false]
-inlinetex              Generate inline TeX code [false]
-interactiveMask        Mask fpu exceptions in interactive mode [true]
```

```
-interactiveView       View output in interactive mode [true]
-interactiveWrite      Write expressions entered at the prompt to stdout [true]
-k,-keep               Keep intermediate files [false]
-keepaux               Keep intermediate LaTeX .aux files [false]
-level n               Postscript level [3]
-l,-listvariables      List available global functions and variables [false]
-localhistory          Use a local interactive history file [false]
-loop                  Loop 3D animations [false]
-m,-mask               Mask fpu exceptions; command-line only
-maxtile pair          Maximum rendering tile size [(1024,768)]
-maxviewport pair      Maximum viewport size [(2048,2048)]
-multiline             Input code over multiple lines at the prompt [false]
-multipleView          View output from multiple batch-mode files [false]
-multisample n         Multisampling width for screen images [4]
-offscreen             Use offscreen rendering [false]
-O,-offset pair        PostScript offset [(0,0)]
-f,-outformat format   Convert each output file to specified format
-o,-outname name       Alternative output directory/filename
-p,-parseonly          Parse file [false]
-pdfreload             Automatically reload document in pdfviewer [false]
-pdfreloaddelay usec   Delay before attempting initial pdf reload [750000]
-position pair         Initial 3D rendering screen position [(0,0)]
-prc                   Embed 3D PRC graphics in PDF output [true]
-prompt string         Prompt [> ]
-prompt2 string        Continuation prompt for multiline input  [..]
-q,-quiet              Suppress welcome text and noninteractive stdout [false]
-render n              Render 3D graphics using n pixels per bp (-1=auto) [-1]
-resizestep step       Resize step [1.2]
-reverse               reverse 3D animations [false]
-rgb                   Convert cmyk colors to rgb [false]
-safe                  Disable system call [true]
-scroll n              Scroll standard output n lines at a time [0]
-spinstep deg/s        Spin speed [60]
-svgemulation          Emulate unimplemented SVG shading [false]
-tabcompletion         Interactive prompt auto-completion [true]
-tex engine            latex|pdflatex|xelatex|lualatex|tex|pdftex|luatex|context|none [latex
-thick                 Render thick 3D lines [true]
-thin                  Render thin 3D lines [true]
-threads               Use POSIX threads for 3D rendering [true]
-toolbar               Show 3D toolbar in PDF output [true]
-s,-translate          Show translated virtual machine code [false]
-twice                 Run LaTeX twice (to resolve references) [false]
-twosided              Use two-sided 3D lighting model for rendering [true]
-u,-user string        General purpose user string
-v,-verbose            Increase verbosity level (can specify multiple times) [0]
-version               Show version; command-line only
```

```
-wait                  Wait for child processes to finish before exiting [false]
-warn string           Enable warning; command-line only
-where                 Show where listed variables are declared [false]
-zoomfactor factor     Zoom step factor [1.05]
-zoomstep step         Mouse motion zoom step [0.1]
```

man page

```
ASY(1)                    General Commands Manual                    ASY(1)

NAME
       asy - Asymptote: a script-based vector graphics language

SYNOPSIS
       asy [options] [file ...]

DESCRIPTION
       Asymptote  is  a powerful descriptive vector graphics language for
       technical drawings, inspired by  MetaPost  but  with  an  improved
       C++-like  syntax.  Asymptote  provides for figures the same high-
       quality level of typesetting that LaTeX does for scientific text.

OPTIONS
       If no arguments are given, Asymptote runs in interactive mode.

       If "-" is given as the file argument, Asymptote reads  from  stan-
       dard input.

       A summary of options is included below. The effect of most options
       can be negated by prepending no to the option name.  Default  val-
       ues  for  most  options  may also be entered in the file .asy/con-
       fig.asy in the user's home directory using the long form:

            import settings;
            batchView=true;

       For a complete description, see the Info files.

       -V,-View
              View output; command-line only.

       -a,-align C|B|T|Z
              Center, Bottom, Top, or Zero page alignment [C].
```

```
-alignndir pair
       Directional page alignment (overrides align) [(0,0)].

-antialias n
       Antialiasing width for rasterized output [2].

-arcballradius pixels
       Arcball radius [750].

-auto3D
       Automatically activate 3D scene [true].

-autobillboard
       3D labels always face viewer by default [true].

-autoimport string
       Module to automatically import.

-autoplain
       Enable automatic importing of plain [true].

-autoplay
       Autoplay 3D animations [false].

-autorotate
       Enable automatic PDF page rotation [false].

-axes3 Show 3D axes in PDF output [true].

-batchMask
       Mask fpu exceptions in batch mode [false].

-batchView
       View output in batch mode [false].

-bw    Convert all colors to black and white [false].

-cd directory
       Set current directory; command-line only.

-cmyk  Convert rgb colors to cmyk [false].

-c,-command string
       Command to autoexecute.

-compact
```

```
       Conserve memory at the expense of speed [false].

-d,-debug
       Enable debugging messages [false].

-divisor n
       Garbage collect using purge(divisor=n) [2].

-doubleclick ms
       Emulated double-click timeout [200].

-embed Embed rendered preview image [true].

-exitonEOF
       Exit interactive mode on EOF [true].

-fitscreen
       Fit rendered image to screen [true].

-framedelay ms
       Additional frame delay [0].

-framerate frames/s
       Animation speed [30].

-globalwrite
       Allow write to other directory [false].

-gray  Convert all colors to grayscale [false].

-h,-help
       Show summary of options; command-line only.

-historylines n
       Retain n lines of history [1000].

-iconify
       Iconify rendering window [false].

-inlineimage
       Generate inline embedded image [false].

-inlinetex
       Generate inline TeX code [false].

-interactiveMask
```

```
       Mask fpu exceptions in interactive mode [true].

-interactiveView
       View output in interactive mode [true].

-interactiveWrite
       Write expressions entered at the prompt to stdout [true].

-k,-keep
       Keep intermediate files [false].

-keepaux
       Keep intermediate LaTeX .aux files [false].

-level n
       Postscript level [3].

-l,-listvariables
       List available global functions and variables [false].

-localhistory
       Use a local interactive history file [false].

-loop  Loop 3D animations [false].

-m,-mask
       Mask fpu exceptions; command-line only.

-maxtile pair
       Maximum rendering tile size [(1024,768)].

-maxviewport pair
       Maximum viewport size [(2048,2048)].

-multiline
       Input code over multiple lines at the prompt [false].

-multipleView
       View output from multiple batch-mode files [false].

-multisample n
       Multisampling width for screen images [4].

-offscreen
       Use offscreen rendering [false].
```

```
-O,-offset pair
       PostScript offset [(0,0)].

-f,-outformat format
       Convert each output file to specified format.

-o,-outname name
       Alternative output directory/filename.

-p,-parseonly
       Parse file [false].

-pdfreload
       Automatically reload document in pdfviewer [false].

-pdfreloaddelay usec
       Delay before attempting initial pdf reload [750000].

-position pair
       Initial 3D rendering screen position [(0,0)].

-prc   Embed 3D PRC graphics in PDF output [true].

-prompt string
       Prompt [> ].

-prompt2 string
       Continuation prompt for multiline input  [..].

-q,-quiet
       Suppress welcome text and noninteractive stdout [false].

-render n
       Render 3D graphics using n pixels per bp (-1=auto) [-1].

-resizestep step
       Resize step [1.2].

-reverse
       reverse 3D animations [false].

-rgb   Convert cmyk colors to rgb [false].

-safe  Disable system call [true].

-scroll n
```

```
       Scroll standard output n lines at a time [0].

-spinstep deg/s
       Spin speed [60].

-svgemulation
       Emulate unimplemented SVG shading [false].

-tabcompletion
       Interactive prompt auto-completion [true].

-tex engine
       latex|pdflatex|xelatex|lualatex|tex|pdftex|luatex|con-
       text|none [latex].

-thick Render thick 3D lines [true].

-thin  Render thin 3D lines [true].

-threads
       Use POSIX threads for 3D rendering [true].

-toolbar
       Show 3D toolbar in PDF output [true].

-s,-translate
       Show translated virtual machine code [false].

-twice Run LaTeX twice (to resolve references) [false].

-twosided
       Use two-sided 3D lighting model for rendering [true].

-u,-user string
       General purpose user string.

-v,-verbose
       Increase verbosity level (can specify multiple times) [0].

-version
       Show version; command-line only.

-wait  Wait for child processes to finish before exiting [false].

-warn string
       Enable warning; command-line only.
```

-where Show where listed variables are declared [false].

-zoomfactor factor
Zoom step factor [1.05].

-zoomstep step
Mouse motion zoom step [0.1].

SEE ALSO

Asymptote is documented fully in the asymptote Info page. The manual can also be accessed in interactive mode with the "help" command.

AUTHOR

Asymptote was written by Andy Hammerlindl, John Bowman, and Tom Prince.

This manual page was written by Hubert Chan for the Debian project (but may be used by others).