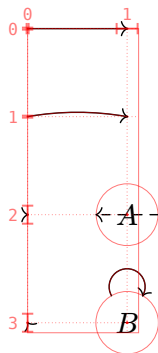
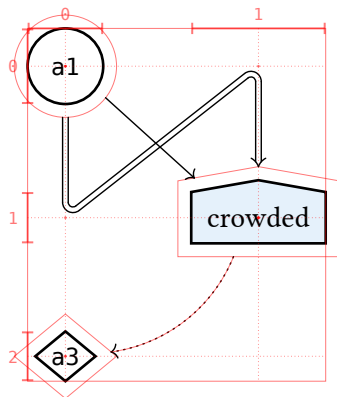
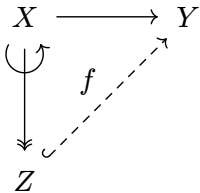


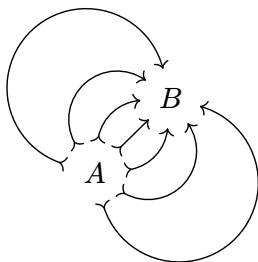
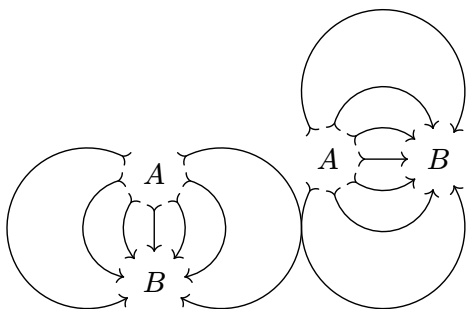
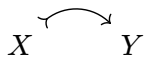
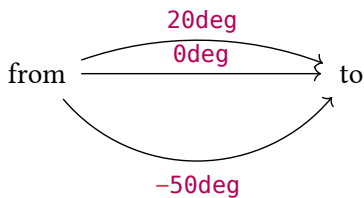
# The CeTZ Way



# Connectors



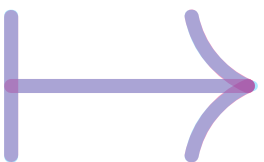
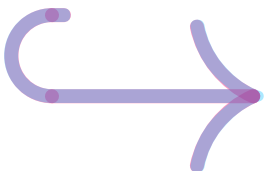
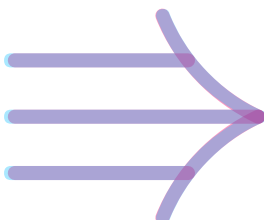
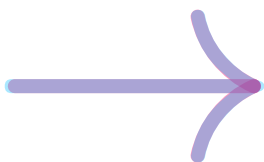
# Arc connectors



# Matching math arrows

Compare to  $\rightarrow$ ,  $\Rightarrow$ ,  $\implies$ ,  $\twoheadrightarrow$ ,  $\hookrightarrow$ ,  $\mapsto$ .

Compare **our output** to the **reference symbol** in default math font.




## Double and triple lines


Diagram  $A \xrightarrow{f} B$  and equation  $A \rightarrow B$ .


Diagram  $A \xRightarrow{f} B$  and equation  $A \Rightarrow B$ .


Diagram  $A \xRightarrow{\quad f \quad} B$  and equation  $A \equiv B$ .


# Arrow head shorthands


"->" = 


"<-" = 


">-<" = 


"<->" = 


"<=>" = 


"<==>" = 


"|->" = 


"|=>" = 


">->" = 


"<<->>" = 


">>-<<" = 


">>>-}>" = 


"hook->" = 


"hook' - - hook" = 


"|=|" = 


"|||-||" = 


"||| - |||" = 


"/- - \\" = 


"\\ = \\" = 

"/=/" = 


"x-X" = 


">>-<<" = 


"harpoon-harpoon'" = 


"harpoon' -<<" = 


"<- - hook'" = 


"|. . |" = 


"hooks - - hooks" = 


"o-0" = 


"0-o" = 


"\*-@" = 

"o==0" = 


"||->>" = 

"<|-|>" = 

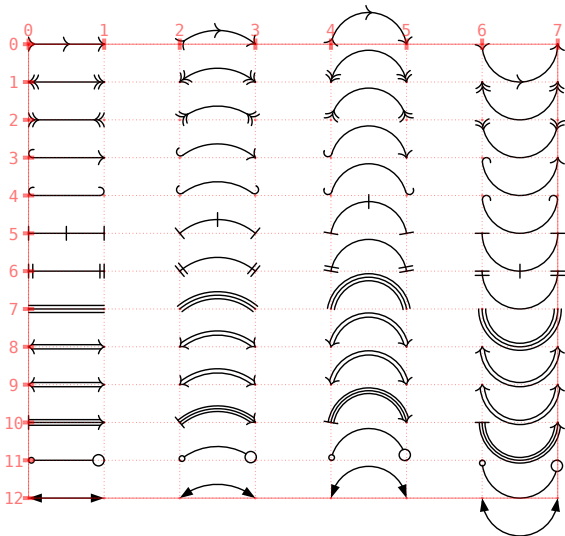
"|>-<|" = 

"-|- " = 

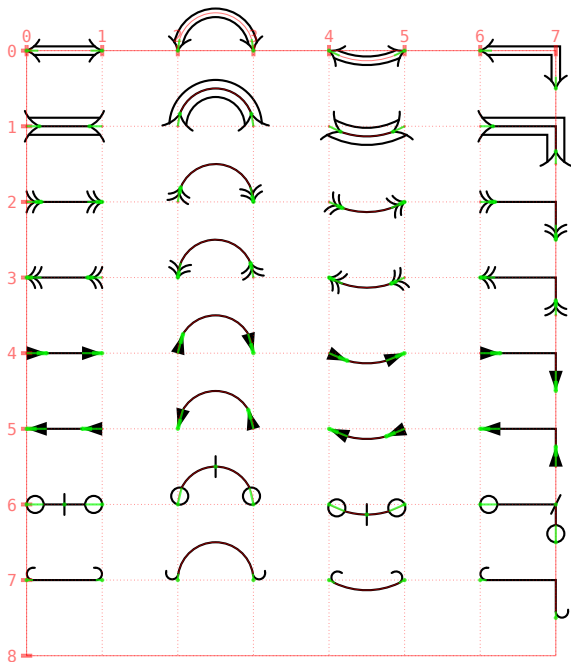
"hook-/->" = 

"<{-}>" = 

## Bending arrows

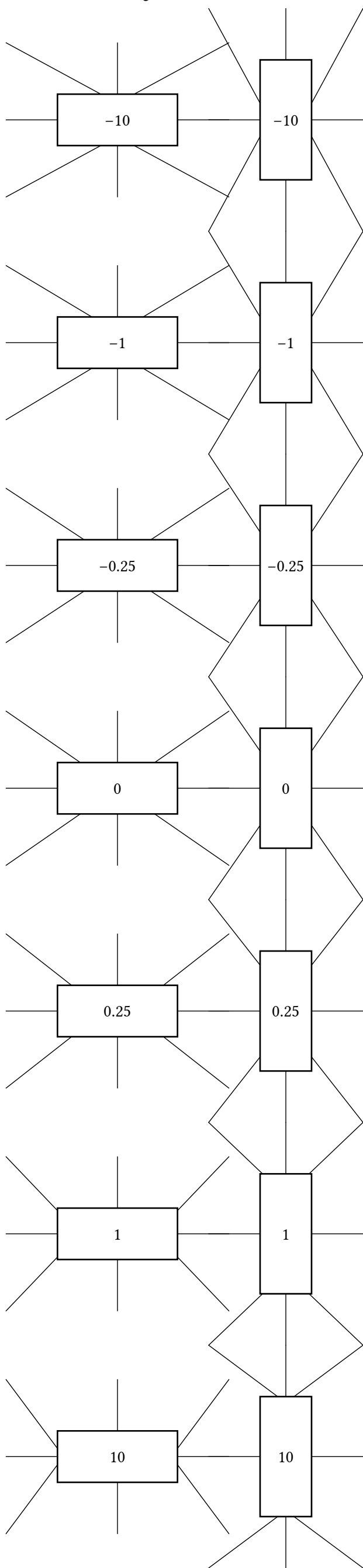


## Fine mark angle corrections

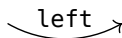




## Defocus adjustment



# Label side


left 

\center>

  
right

left  


-center>

  
right

left  


/center>

/right>

left 


left 

left 

  
center  


  
center  


  
center  

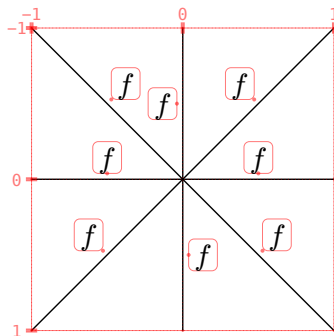

  
right

  
right

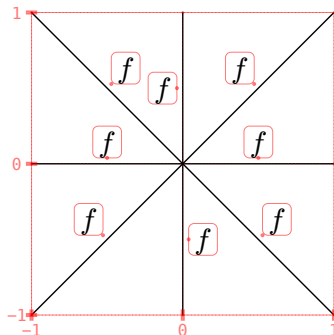
  
right

# Automatic label placement

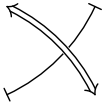
Default placement above the line.



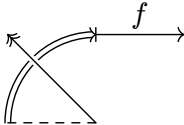
Reversed  $y$ -axis:



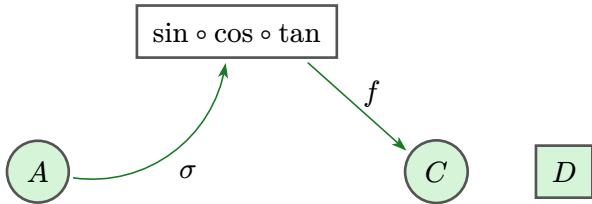
# Crossing connectors



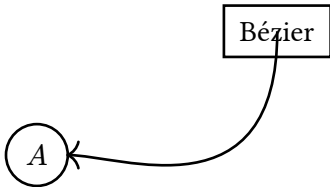
**edge( ) argument shorthands**



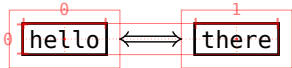
# Diagram-level options



# CeTZ integration

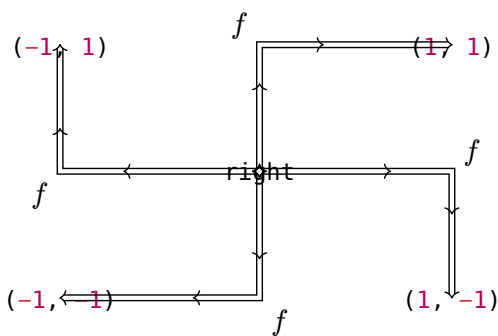
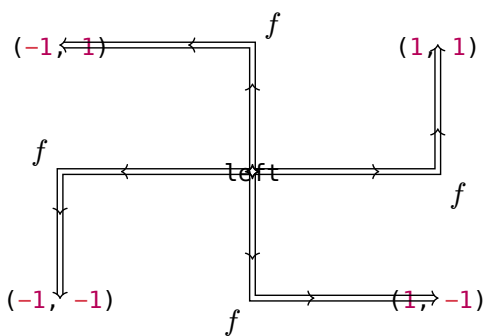
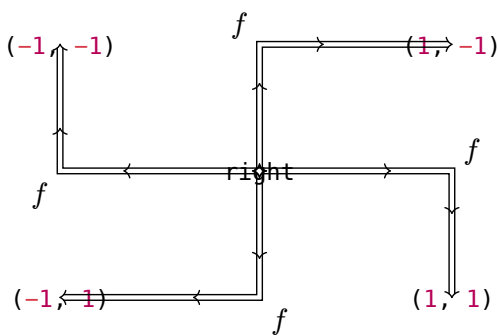
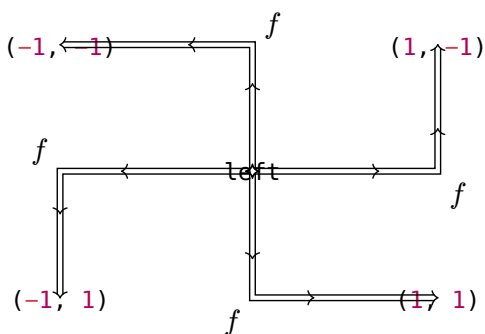


# Node bounds, inset, and outset

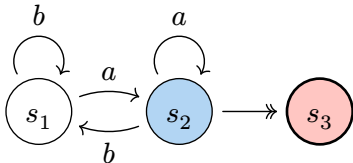




# Corner edges



# Double node strokes



outer

inner

middle

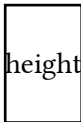
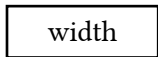
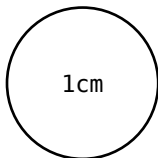
Relative and absolute extrusion lengths

outer

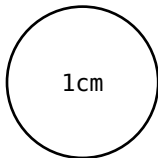
inner

# Custom node sizes

Make sure provided dimensions are exact, not affected by node inset.

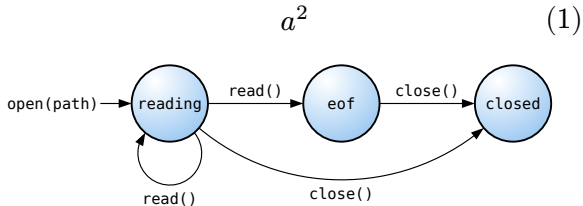


both



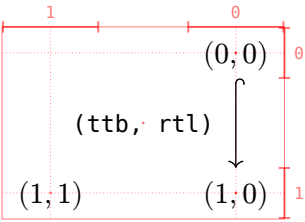
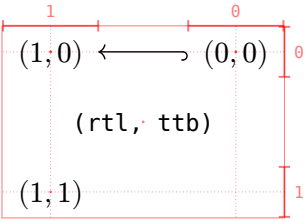
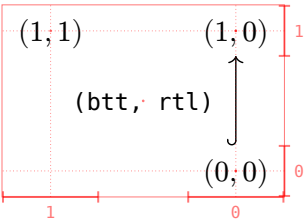
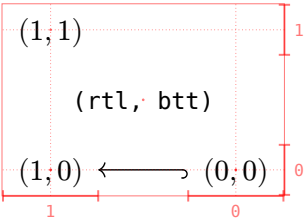
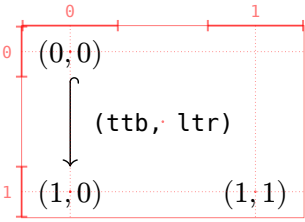
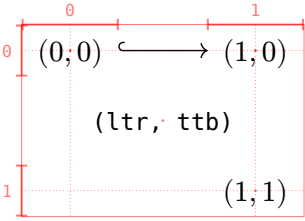
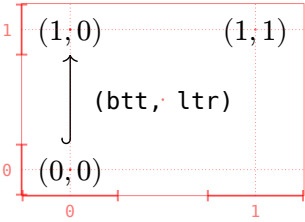
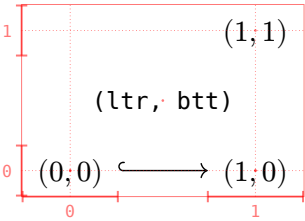
# Example

Make sure node or edge labels don't pick up equation numbers!

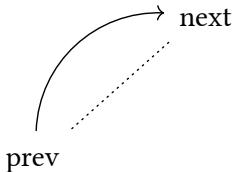
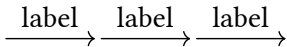


$b^2$  (2)

# Axes configuration



# Implicit from and to points

































# Edge positional arguments

Explicit named arguments versus implicit positional arguments.

Each row should be the same thing repeated.

$A \longrightarrow B$	$A \longrightarrow B$	$A \longrightarrow B$
$A \xrightarrow{\pi} B$	$A \xrightarrow{\pi} B$	$A \xrightarrow{\pi} B$
$A \xrightarrow{\tau} B$	$A \xrightarrow{\tau} B$	$A \xrightarrow{\tau} B$
$A \xrightarrow{+} B$	$A \xrightarrow{+} B$	$A \xrightarrow{+} B$

# Symbol arrow aliases

Math	Unicode	Mark	Diagram
$\rightarrow$	$\rightarrow$	->	
$\longrightarrow$		->	
$\leftarrow$	$\leftarrow$	<-	
$\leftrightarrow$	$\leftrightarrow$	<->	
$\longleftrightarrow$		<->	
$\Rightarrow$		->>	
$\Leftarrow$		<<-	
$\rightharpoonup$		>->	
$\leftharpoonup$		<-<	
$\Rightarrow$	$\Rightarrow$	=>	
$\Longrightarrow$		=>	
$\Leftarrow$		<=	
$\Leftrightarrow$	$\Leftrightarrow$	<=>	
$\Leftrightarrow$		<=>	
$\mapsto$	$\mapsto$	->	
$\mapsto$		=>	
$\rightsquigarrow$		none!	none!
$\leftrightsquigarrow$		none!	none!
$\hookrightarrow$		hook->	
$\hookleftarrow$		<-hook'	



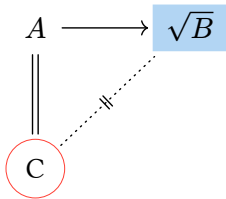
# Math-mode diagrams

The following diagrams should be identical:

$$\begin{array}{ccc} G & \xrightarrow{f} & \operatorname{im}(f) \\ \pi \downarrow & \nearrow \tilde{f} & \\ G/\ker(f) & & \end{array}$$

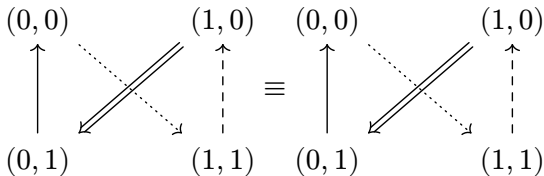
$$\begin{array}{ccc} G & \xrightarrow{f} & \operatorname{im}(f) \\ \pi \downarrow & \nearrow \tilde{f} & \\ G/\ker(f) & & \end{array}$$

# Nodes in math-mode



# Relative node coordinates

$$\begin{array}{ccc}
 G & \xrightarrow{f} & \text{im}(f) \\
 \pi \downarrow & \nearrow \tilde{f} & \\
 G/\ker(f) & & 
 \end{array}$$



## Edge paths

