

# Examples of how to use `shortex.sty`

Created by Trevor Campbell, Jonathan Huggins, and Jeff Negrea

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## 1 Brackets and bracket-like functions

You can specify a bracket size using  $-1, \dots, 4$ , where  $-1$  uses `\left` and `\right`,  $0$  uses nothing, and positive numbers use increasingly large fixed sizes. The default behavior is  $0$  when in text mode and  $-1$  when in display mode.

Description	Example	Text style	Display style
Regular brackets (parentheses)	<code>\rbra{\frac{x}{y}}</code>	$(\frac{x}{y})$	$\left(\frac{x}{y}\right)$
Curly brackets	<code>\cbra[2]{\frac{x}{y}}</code>	$\left\{\frac{x}{y}\right\}$	$\left\{\frac{x}{y}\right\}$
Square brackets	<code>\sbra[4]{\frac{x}{y}}</code>	$\left[\frac{x}{y}\right]$	$\left[\frac{x}{y}\right]$

Many other bracket-like, semantic commands are also available:

Description	Example	Text style	Display style
Absolute value	<code>\abs{\frac{x}{y}}</code>	$ \frac{x}{y} $	$\left \frac{x}{y}\right $
Set	<code>\set{\frac{x}{y}, \frac{y}{z}}</code>	$\{\frac{x}{y}, \frac{y}{z}\}$	$\left\{\frac{x}{y}, \frac{y}{z}\right\}$
Floor	<code>\floor{\frac{x}{y}}</code>	$\lfloor\frac{x}{y}\rfloor$	$\left\lfloor\frac{x}{y}\right\rfloor$
Ceiling	<code>\ceil{\frac{x}{y}}</code>	$\lceil\frac{x}{y}\rceil$	$\left\lceil\frac{x}{y}\right\rceil$
Norm	<code>\norm{\frac{x}{y}}</code>	$\ \frac{x}{y}\ $	$\left\ \frac{x}{y}\right\ $
Inner product	<code>\inner{\frac{x}{y}}{\frac{y}{z}}</code>	$\langle\frac{x}{y}, \frac{y}{z}\rangle$	$\left\langle\frac{x}{y}, \frac{y}{z}\right\rangle$
Cardinality	<code>\card{\mathcal{A}}</code>	$ \hat{A} $	$ \hat{A} $

Some examples of each size option:

	-1	0	1	2	3	4
<code>\abs{\frac{x}{y}}</code>	$ \frac{x}{y} $	$ \frac{x}{y} $	$ \frac{x}{y} $	$ \frac{x}{y} $	$ \frac{x}{y} $	$ \frac{x}{y} $
<code>\floor{\frac{x}{y}}</code>	$\lfloor\frac{x}{y}\rfloor$	$\lfloor\frac{x}{y}\rfloor$	$\lfloor\frac{x}{y}\rfloor$	$\lfloor\frac{x}{y}\rfloor$	$\lfloor\frac{x}{y}\rfloor$	$\lfloor\frac{x}{y}\rfloor$
<code>\norm{\frac{x}{y}}</code>	$\ \frac{x}{y}\ $	$\ \frac{x}{y}\ $	$\ \frac{x}{y}\ $	$\ \frac{x}{y}\ $	$\ \frac{x}{y}\ $	$\ \frac{x}{y}\ $

The norm and inner product commands also have versions with a subscript argument:

Description	Example	Text style	Display style
Norm with subscript	<code>\normsub{\frac{x}{y}}{2}</code>	$\ \frac{x}{y}\ _2$	$\left\ \frac{x}{y}\right\ _2$
Inner product with subscript	<code>\innersub{\frac{x}{y}}{z}{2}</code>	$\langle\frac{x}{y}, z\rangle_2$	$\left\langle\frac{x}{y}, z\right\rangle_2$

## 2 $L_p$ Spaces and Operators

Description	Example	Text style	Display style
$L_p$ space	<code>\Lp{2}</code>	$L_2$	$L_2$
$L_p$ space for specified measure	<code>\Lpmeas{2}{\hmu}</code>	$L_2(\hat{\mu})$	$L_2(\hat{\mu})$
	<code>\Lpmeas[1]{2}{\hmu}</code>	$L_2(\hat{\mu})$	$L_2(\hat{\mu})$
$L_p$ norm	<code>\Lpnorm{\hGamma}{2}</code>	$\ \hat{\Gamma}\ _{L_2}$	$\ \hat{\Gamma}\ _{L_2}$
	<code>\Lpnorm[-1]{\hGamma}{2}</code>	$\ \hat{\Gamma}\ _{L_2}$	$\ \hat{\Gamma}\ _{L_2}$
$L_p$ norm for specified measure	<code>\Lpmeasnorm{\hGamma}{2}{\hmu}</code>	$\ \hat{\Gamma}\ _{L_2(\hat{\mu})}$	$\ \hat{\Gamma}\ _{L_2(\hat{\mu})}$
	<code>\Lpmeasnorm[1]{\hGamma}{2}{\hmu}</code>	$\ \hat{\Gamma}\ _{L_2(\hat{\mu})}$	$\ \hat{\Gamma}\ _{L_2(\hat{\mu})}$
$L_p$ inner product	<code>\Lpinner{\hGamma}{\Gamma}{2}</code>	$\langle \hat{\Gamma}, \Gamma \rangle_{L_2}$	$\langle \hat{\Gamma}, \Gamma \rangle_{L_2}$
	<code>\Lpinner[-1]{\hGamma}{\Gamma}{2}</code>	$\langle \hat{\Gamma}, \Gamma \rangle_{L_2}$	$\langle \hat{\Gamma}, \Gamma \rangle_{L_2}$
$L_p$ inner product for specified measure	<code>\Lpmeasinner{\hGamma}{\Gamma}{2}{\hmu}</code>	$\langle \hat{\Gamma}, \Gamma \rangle_{L_2(\hat{\mu})}$	$\langle \hat{\Gamma}, \Gamma \rangle_{L_2(\hat{\mu})}$
	<code>\Lpmeasinner[1]{\hGamma}{\Gamma}{2}{\hmu}</code>	$\langle \hat{\Gamma}, \Gamma \rangle_{L_2(\hat{\mu})}$	$\langle \hat{\Gamma}, \Gamma \rangle_{L_2(\hat{\mu})}$

### 3 annotation commands

<code>\barA</code>	$\bar{A}$
<code>\bara</code>	$\bar{a}$
<code>\bA</code>	$\bar{A}$
<code>\bB</code>	$\bar{B}$
<code>\balpha</code>	$\bar{\alpha}$
<code>\bGamma</code>	$\bar{\Gamma}$
<code>\mcA</code>	$\mathcal{A}$
<code>\hmcA</code>	$\hat{\mathcal{A}}$
<code>\mfA</code>	$\mathfrak{A}$
<code>\mfa</code>	$\mathfrak{a}$
<code>\bmfA</code>	$\mathfrak{A}$
<code>\bmfa</code>	$\mathfrak{a}$
<code>\hA</code>	$\hat{A}$
<code>\ha</code>	$\hat{a}$
<code>\halpha</code>	$\hat{\alpha}$
<code>\hGamma</code>	$\hat{\Gamma}$
<code>\bhA</code>	$\hat{\mathbf{A}}$
<code>\bha</code>	$\hat{\mathbf{a}}$
<code>\bhalpha</code>	$\hat{\alpha}$
<code>\bhGamma</code>	$\hat{\Gamma}$
<code>\whA</code>	$\widehat{A}$
<code>\wha</code>	$\widehat{a}$
<code>\tdA</code>	$\tilde{A}$
<code>\tda</code>	$\tilde{a}$
<code>\tdalpha</code>	$\tilde{\alpha}$
<code>\tdGamma</code>	$\tilde{\Gamma}$
<code>\btdA</code>	$\tilde{\mathbf{A}}$
<code>\btda</code>	$\tilde{\mathbf{a}}$
<code>\btdalpha</code>	$\tilde{\alpha}$
<code>\btdGamma</code>	$\tilde{\Gamma}$
<code>\biA</code>	$\mathbf{A}$
<code>\bia</code>	$\mathbf{a}$
<code>\bhiA</code>	$\hat{\mathbf{A}}$
<code>\bhia</code>	$\hat{\mathbf{a}}$