

Notes on Forco Loregian's

“Coend calculus — the book formerly known as ‘This is the co/end’”: available at:

<https://arxiv.org/pdf/1501.02503.pdf>

These notes are at:

<http://angg.twu.net/LATEX/2020loregian.pdf>

See:

<http://angg.twu.net/LATEX/2020favorite-conventions.pdf>

<http://angg.twu.net/math-b.html#favorite-conventions>

$$\begin{aligned}
\mathcal{C}(C, R(\lim_{\mathcal{J}} D_J)) &\cong \mathcal{C}(LC, \lim_{\mathcal{J}} D_J) \\
&\cong \lim_{\mathcal{J}} \mathcal{C}(LC, D_J) \\
&\cong \lim_{\mathcal{J}} \mathcal{C}(C, RD_J) \\
&\cong \mathcal{C}(C, \lim_{\mathcal{J}} RD_J)
\end{aligned}$$

$$\begin{array}{ccc}
(LA \quad LA) & \longleftarrow & (A \quad A) \\
\downarrow & \swarrow & \downarrow \\
(B_1 \quad B_2) & \longleftarrow & (RB_1 \quad RB_2) \\
& \searrow & \swarrow \\
& LA & \longleftarrow & A \\
& \downarrow & & \downarrow \\
B_1 \times B_2 & \longleftarrow & R(B_1 \times B_2) & RB_1 \times RB_2
\end{array}$$

$$\begin{array}{ccc}
\mathbf{B}^{\bullet\bullet} & \xrightleftharpoons[L^{\bullet\bullet}]{R^{\bullet\bullet}} & \mathbf{A}^{\bullet\bullet} \\
\swarrow \Delta & & \searrow \Delta \\
\lim & & \lim \\
\mathbf{B} & \xrightleftharpoons[L]{R} & \mathbf{A}
\end{array}$$

$$\begin{array}{ccc}
\Delta LA = L^I \Delta A & \longleftarrow & \Delta A \\
\downarrow & \swarrow & \downarrow \\
D & \longleftarrow & R^I D \\
& \searrow & \swarrow \\
& LA & \longleftarrow & A \\
& \downarrow & & \downarrow \\
\lim D & \longleftarrow & R(\lim D) & \lim(R^I D)
\end{array}$$

$$\begin{array}{ccc}
\mathbf{B}^I & \xrightleftharpoons[L^I]{R^I} & \mathbf{A}^I \\
\swarrow \Delta & & \searrow \Delta \\
\lim & & \lim \\
\mathbf{B} & \xrightleftharpoons[L]{R} & \mathbf{A}
\end{array}$$