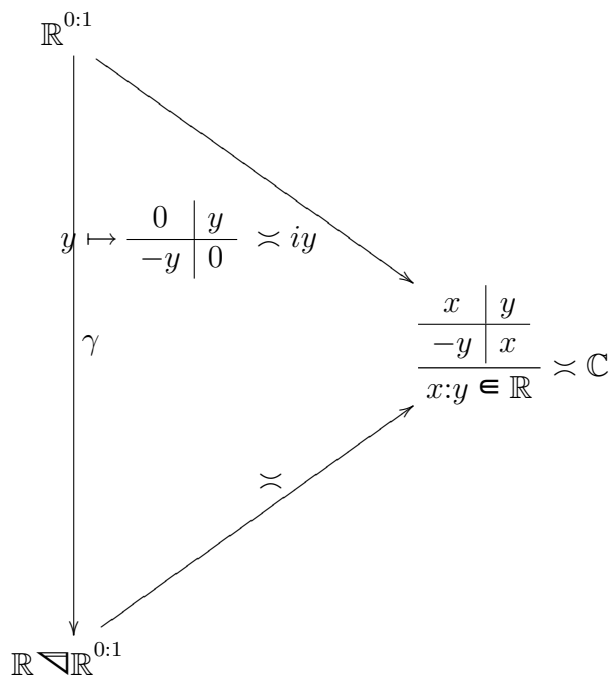


$$\frac{0|y}{y|0} \frac{0|y}{y|0} = y^2 \frac{1|0}{0|1}$$

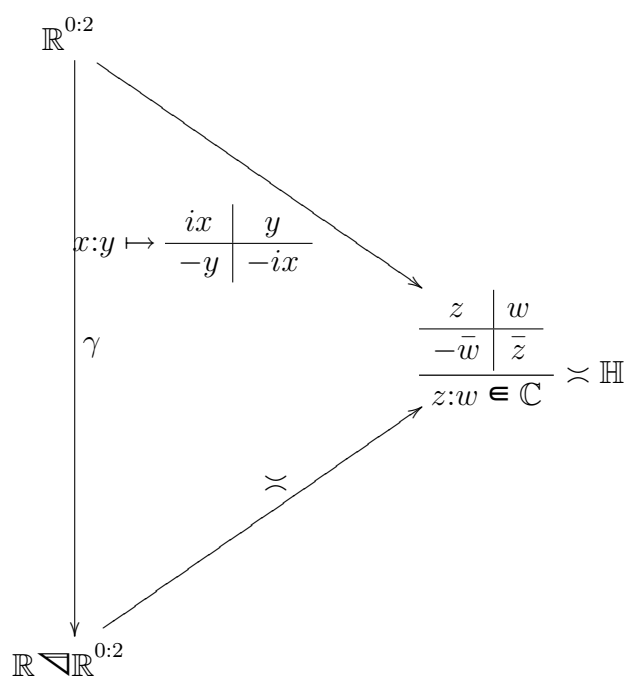
$$\frac{x}{y} \left| \frac{y}{x} \right. \in \mathbb{R} \nabla \mathbb{R}^{1:0} \xrightarrow{\simeq} \mathbb{R} \times \mathbb{R} \ni \underbrace{x+y} : \underbrace{x-y}$$

$$\frac{x}{y} \left| \frac{y}{x} \right. \frac{x}{y} \left| \frac{y}{x} \right. = \frac{x\dot{x} + y\dot{y}}{x\dot{y} + y\dot{x}} \left| \frac{x\dot{y} + y\dot{x}}{x\dot{x} + y\dot{y}} \right. \simeq \overbrace{x\dot{x} + y\dot{y}} + \overbrace{x\dot{y} + y\dot{x}} : \overbrace{x\dot{x} + y\dot{y}} - \overbrace{x\dot{y} + y\dot{x}}$$

$$\underbrace{x+y} : \underbrace{x-y} \times \underbrace{\dot{x} + \dot{y}} : \underbrace{\dot{x} - \dot{y}} = \overbrace{x+y} \overbrace{\dot{x} + \dot{y}} : \overbrace{x-y} \overbrace{\dot{x} - \dot{y}} = \overbrace{x\dot{x} + y\dot{y} + x\dot{y} + y\dot{x}} : \overbrace{x\dot{x} + y\dot{y} - x\dot{y} - y\dot{x}}$$

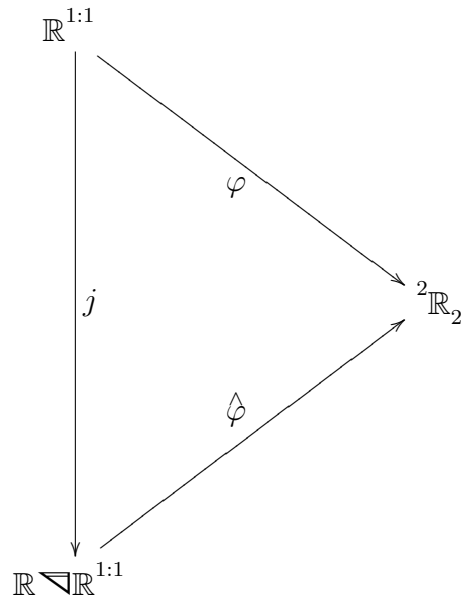


$$\frac{0}{-y} \left| \frac{y}{0} \right. \frac{0}{-y} \left| \frac{y}{0} \right. = -y^2 \frac{1}{0} \left| \frac{0}{1} \right.$$



$$\frac{ix \mid y}{-y \mid -ix} \frac{ix \mid y}{-y \mid -ix} = -(x^2 + y^2) \frac{1 \mid 0}{0 \mid 1}$$

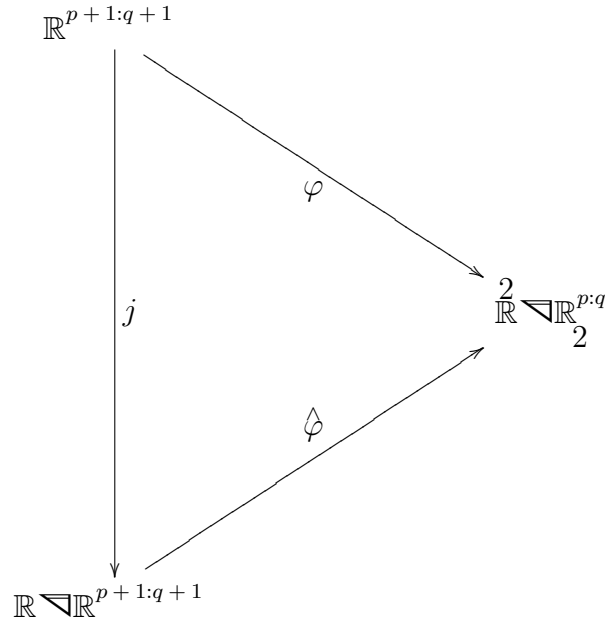
$$\mathbb{R} \triangleleft \mathbb{R}^{1:1} \succ \mathbb{R}_2$$



$$\mathbb{R}^{1:1} \ni x:y \mapsto \frac{0}{x-y1} \mid \frac{x+y1}{0}$$

$$\begin{aligned} \frac{0}{x-y1} \mid \frac{x+y1}{0} &= \frac{0}{x-y1} \mid \frac{x+y1}{0} \frac{0}{x-y1} \mid \frac{x+y1}{0} \\ &= \frac{x^2-y^21}{0} \mid \frac{0}{x^2-y^21} = x^2-y^21 \mid \frac{0}{1} = x:y \star x:y \mid \frac{0}{1} \end{aligned}$$

$$\mathbb{R} \triangleleft \mathbb{R}^{p+1:q+1} \simeq \frac{2}{\mathbb{R}} \triangleleft \frac{2}{\mathbb{R}} \mathbb{R}^{p:q}$$



$$\mathbb{R}^{p+1:q+1} = \mathbb{R}^{p:q} \times \mathbb{R}^{1:1} \ni \mathbb{L}:x:y \mapsto \frac{\mathbb{L}}{x-y} \left| \begin{array}{c} x+y \\ 1 \\ -\mathbb{L} \end{array} \right.$$

$$\begin{aligned} \frac{\mathbb{L}}{x-y} \left| \begin{array}{c} x+y \\ 1 \\ -\mathbb{L} \end{array} \right. &= \frac{\mathbb{L}}{x-y} \left| \begin{array}{c} x+y \\ 1 \\ -\mathbb{L} \end{array} \right. \frac{\mathbb{L}}{x-y} \left| \begin{array}{c} x+y \\ 1 \\ -\mathbb{L} \end{array} \right. \\ &= \frac{\mathbb{L} \times \mathbb{L} + x^2 - y^2}{0} \left| \begin{array}{c} 0 \\ \mathbb{L} \times \mathbb{L} + x^2 - y^2 \\ 1 \end{array} \right. = \frac{\mathbb{L} \star \mathbb{L} + x^2 - y^2}{0} \left| \begin{array}{c} 0 \\ \mathbb{L} \star \mathbb{L} + x^2 - y^2 \\ 1 \end{array} \right. \\ &= \mathbb{L} \star \mathbb{L} + x^2 - y^2 \left| \begin{array}{c} 1 \\ 0 \\ 1 \end{array} \right. = \mathbb{L}:x:y \star \mathbb{L}:x:y \left| \begin{array}{c} 1 \\ 0 \\ 1 \end{array} \right. \end{aligned}$$

$$\mathbb{R} \triangleleft \mathbb{R}^{1+p:q} \simeq \mathbb{R} \triangleleft \mathbb{R}^{1+q:p}$$

$$x:L \mapsto x:0 + 1:0 \times 0:L$$

$$\begin{aligned} \underline{x:0 + 1:0 \times 0:L} \times \underline{x:0 + 1:0 \times 0:L} &= x:0 \times x:0 + x:0 \times 1:0 \times 0:L + 1:0 \times 0:L \times x:0 + 1:0 \times 0:L \times 1:0 \times 0:L \\ &= x:0 \times x:0 + x:0 \times 1:0 \times 0:L + 1:0 \times 0:L \times x:0 - 1:0 \times 1:0 \times 0:L \times 0:L \end{aligned}$$