$$a|b \xrightarrow[\text{bes int}]{ʅ} \mathbb{R} \Rightarrow \bigwedge_{x:y}^{a|b} x|y \xrightarrow[\text{bes int}]{ʅ} \mathbb{R}$$

$$\int_x^y ʅ = \begin{cases} \int^{x|y} ʅ & x<y \\ 0 & x=y \\ -\int^{y|x} ʅ & x>y \end{cases}$$

$$\int_x^x ʅ \underset{\text{refl}}{=} 0: \quad \int_x^y ʅ \underset{\text{asym}}{=} -\int_y^x ʅ: \quad \int_y^x ʅ + \int_z^y ʅ \underset{\text{trans}}{=} \int_z^x ʅ$$

$$a|b \xrightarrow[\text{bes int}]{ʅ} \mathbb{R} \Rightarrow \int_a^x ʅ = \int_{dt}^{a|x} {}^tʅ \Rightarrow a|b \xrightarrow[\text{u-stet}]{\int_a ʅ} \mathbb{R}$$

$$\varepsilon>0 \Rightarrow \bigwedge_{x:y}^{a|b} \overline{x-y} \leqslant \frac{\varepsilon}{{}^{a|b}\overline{\overset{\bullet}{ʅ}}} \Rightarrow \overline{\int_a^y ʅ - \int_a^x ʅ} = \overline{\int_x^y ʅ} \leqslant \overline{y-x}\,{}^{x|y}\overline{\overset{\bullet}{ʅ}} \leqslant \overline{y-x}\,{}^{a|b}\overline{\overset{\bullet}{ʅ}} \leqslant \varepsilon$$

$$a|b \xrightarrow[\text{bes int o-stet}]{ʅ} \mathbb{R} \Rightarrow \begin{cases} a|b \xrightarrow[\text{o-diff}]{\int_a ʅ} \mathbb{R} \\ \underline{\int_a^o} ʅ = {}^oʅ \end{cases}$$

$$\overline{x-o} \leqslant \frac{\varepsilon}{ʅ{:}o} \Rightarrow {}^{o|x}\overset{\bullet}{\overline{ʅ - {}^oʅ}} \leqslant \varepsilon$$

$$\Rightarrow \overline{\int_a^x ʅ - \int_a^o ʅ - \underbrace{x-o}_{}\,{}^oʅ} = \overline{\int_o^x ʅ - \underbrace{x-o}_{}\,{}^oʅ} = \overline{\int_o^x ʅ - \int_o^x {}^oʅ} = \overline{\int_o^x \underbrace{ʅ - {}^oʅ}_{}} \leqslant \overline{x-o}\,{}^{o|x}\overset{\bullet}{\overline{ʅ-{}^oʅ}} \leqslant \overline{x-o}\,\varepsilon$$

$$\Rightarrow \overline{\frac{\int_a^x ʅ - \int_a^o ʅ}{x-o} - {}^oʅ} \leqslant \varepsilon$$

$$\frac{d}{dx}\int^x ʅ = \frac{d}{dx}\int^x dt\,{}^tʅ = {}^xʅ$$

$$a|b \xrightarrow[\text{stet diff}]{\text{ч}} \mathbb{R}: \quad a|b \xrightarrow[\text{bes int}]{\underline{\text{ч}}} \mathbb{R} \Longrightarrow \begin{cases} \int\limits_a^b \underline{\text{ч}} & = {}^b\text{ч} - {}^a\text{ч} \\ \bigwedge\limits_{x:y}^{a|b} & \int\limits_x^y \underline{\text{ч}} = {}^y\text{ч} - {}^x\text{ч} \end{cases}$$

$$\mathcal{I} \text{ part } \Longrightarrow \bigwedge_I^{\mathcal{I}} \bigvee_{o_I}^{I} \frac{{}^{r_I}\text{ч} - {}^{\ell_I}\text{ч}}{r_I - \ell_I} \underset{\text{MWS}}{=} {}^{o_I}\underline{\text{ч}} \Longrightarrow {}^{r_I}\text{ч} - {}^{\ell_I}\text{ч} = |I|\, {}^{o_I}\underline{\text{ч}}$$

$$\Longrightarrow \begin{cases} {}^{\mathcal{I}}_{\bullet}\underline{\text{ч}} \leqslant \\ {}^{\mathcal{I}}\underline{\overset{\bullet}{\text{ч}}} \geqslant \end{cases} \sum_I^{\mathcal{I}} |I|\, {}^{o_I}\underline{\text{ч}} = \sum_I^{\mathcal{I}} \underbrace{{}^{r_I}\text{ч} - {}^{\ell_I}\text{ч}} \underset{\text{tele}}{=} {}^b\text{ч} - {}^a\text{ч}$$

$$\Longrightarrow \curlyvee_{\mathcal{I}} {}^{\mathcal{I}}_{\bullet}\underline{\text{ч}} \leqslant {}^b\text{ч} - {}^a\text{ч} \leqslant \curlywedge_{\mathcal{I}} {}^{\mathcal{I}}\underline{\overset{\bullet}{\text{ч}}}$$

$$\underline{\text{ч}} \text{ int } \Longrightarrow \curlyvee_{\mathcal{I}} {}^{\mathcal{I}}_{\bullet}\underline{\text{ч}} = {}^b\text{ч} - {}^a\text{ч} = \curlywedge_{\mathcal{I}} {}^{\mathcal{I}}\underline{\overset{\bullet}{\text{ч}}}$$

$$\int\limits_\beta^\alpha \frac{dy}{1+y^2} = {}^\beta\!\not{x} - {}^\alpha\!\not{x}$$

$${}^x\mathfrak{t} = \frac{{}^x\mathfrak{s}}{{}^x\mathfrak{c}} \Longrightarrow {}^x\underline{\mathfrak{t}} = \frac{{}^x\mathfrak{c}^2 + {}^x\mathfrak{s}^2}{{}^x\mathfrak{c}^2} = \frac{1}{{}^x\mathfrak{c}^2} = 1 + {}^x\mathfrak{t}^2$$

$${}^{{}^x\mathfrak{t}}\underline{\not{x}} = \frac{1}{{}^x\underline{\mathfrak{t}}} = \frac{1}{1 + {}^x\mathfrak{t}^2} \Longrightarrow {}^y\underline{\not{x}} = \frac{1}{1+y^2}$$

$$\int\limits_\beta^\alpha \frac{dy}{1-y^2} = {}^\beta\mathfrak{f}^{-1} - {}^\alpha\mathfrak{f}^{-1}$$

$${}^x\mathfrak{f} = \frac{{}^x\mathfrak{z}}{{}^x\not{x}} \Longrightarrow {}^x\underline{\mathfrak{f}} = \frac{{}^x\not{x}^2 - {}^x\mathfrak{z}^2}{{}^x\not{x}^2} = \frac{1}{{}^x\not{x}^2} = 1 - {}^x\mathfrak{f}^2$$

$${}^{{}^x\mathfrak{f}}\underline{\mathfrak{f}}^{-1} = \frac{1}{{}^x\underline{\mathfrak{f}}} = \frac{1}{1 - {}^x\mathfrak{f}^2} \Longrightarrow {}^y\underline{\mathfrak{f}}^{-1} = \frac{1}{1-y^2}$$

$$\int_{\beta}^{\alpha} \frac{dy}{\sqrt{1-y^2}} = {}^{\beta}\not{\mathfrak{s}} - {}^{\alpha}\not{\mathfrak{s}}$$

$${}^{x}\underline{\mathfrak{s}} = {}^{x}\mathfrak{c} = \sqrt{1-{}^{x}\mathfrak{s}^2}$$

$${}^{x\mathfrak{s}}\underline{\not{\mathfrak{s}}} = \frac{1}{{}^{x}\underline{\mathfrak{s}}} = \frac{1}{\sqrt{1-{}^{x}\mathfrak{s}^2}} \Longrightarrow {}^{y}\underline{\not{\mathfrak{s}}} = \frac{1}{\sqrt{1-y^2}}$$

$$\int_{\alpha}^{\beta} \frac{dy}{\sqrt{1+y^2}} = {}^{\beta}\mathfrak{z}^{-1} - {}^{\alpha}\mathfrak{z}^{-1}$$

$${}^{x}\underline{\mathfrak{z}} = {}^{x}\not{\mathfrak{t}} = \sqrt{1+{}^{x}\mathfrak{z}^2}$$

$${}^{x\mathfrak{z}}\underline{\mathfrak{z}}^{-1} = \frac{1}{{}^{x}\underline{\mathfrak{z}}} = \frac{1}{\sqrt{1+{}^{x}\mathfrak{z}^2}} \Longrightarrow {}^{y}\underline{\mathfrak{z}}^{-1} = \frac{1}{\sqrt{1+y^2}}$$