$$\text{conv/off } U \subset \mathbb{R}^n: \quad U \xrightarrow[+\text{diff}]{\curvearrowright} \mathbb{R}^n: \quad \bigwedge_x^U \ulcorner {}^x\underline{\curvearrowright} - I \urcorner < 1 \Rightarrow \curvearrowright \text{ inj}$$

$$\mathbb{R}^2 \llcorner 0 \ni x{:}y \mapsto x^2 - \frac{3}{2}y^2 | xy \begin{cases} \text{loc inv} \\ \text{nicht bij} \end{cases}$$

$$\mathbb{R}^2 \ni x{:}y \mapsto e^x \cos y | e^x \sin y \in \mathbb{R}^2 \llcorner 0 \begin{cases} \text{loc inv} \\ \text{nicht inj} \\ \text{surj} \end{cases}$$

$$\mathbb{R}^2 \underset{\text{off}}{\supset} \frac{x{:}y \in \mathbb{R}^2}{x + y \notin \mathbb{Z}\pi} \xrightarrow{\curvearrowright} \mathbb{R}^2: \quad {}^{x:y}\curvearrowright = (e^x \cos y{:}e^y \sin x) \text{ lok Diffeo/glob Diffeo?}$$

Funkt-Matrix/Det/max InjBer/Bildmenge//Inverse

$$\text{Polar-Koord } \mathbb{R}_> \times \mathbb{R} \xrightarrow{\curvearrowright} \mathbb{R}^2 \llcorner 0: \quad {}^{r:t}\curvearrowright = \underbrace{r \cos t | r \sin t}$$

$$\text{find max off } V \subset \mathbb{R}_> \times \mathbb{R}: \quad V \xrightarrow[\text{bij}]{\curvearrowright} \mathbb{R}^2 \llcorner \left(\mathbb{R}\_ \times 0\right)$$

$$\mathbb{R}^2 \llcorner \left(\mathbb{R}\_ \times 0\right) \xrightarrow[\text{bij}]{g = \curvearrowright^{-1}} V: \quad \text{explizit } r = g_1 (x{:}y) / t = g_2 (x{:}y): \quad \text{Funkt-Matrix } \frac{\frac{\partial r}{\partial x}(x{:}y) \;\Big|\; \frac{\partial r}{\partial y}(x{:}y)}{\frac{\partial t}{\partial x}(x{:}y) \;\Big|\; \frac{\partial t}{\partial y}(x{:}y)}$$

$$\text{Kugel-Koord } \mathbb{R}_> \times \mathbb{R}^2 \ni \underbrace{r{:}\vartheta{:}\varphi} \mapsto \underbrace{r \cos\vartheta \sin\varphi | r \sin\vartheta \sin\varphi | r \cos\varphi} \in \mathbb{R}^3 \llcorner 0$$

$${}^{x:y}\curvearrowright = \left(xy{:}\frac{x}{y}\right) \text{ which } x{:}y \in \mathbb{R} \times \mathbb{R}^\times \text{ inv Funkt-Matrix}$$

$$v \in \mathbb{R}^n \xrightarrow[\text{diff}]{\curvearrowright} \mathbb{R}^n \ni v \ulcorner v \urcorner / \; {}^v\underline{\curvearrowright}$$

$$x{:}y \in \mathbb{R}^2 \xrightarrow[\text{diffeo}]{\curvearrowright} \mathbb{R}^2 \ni e^x + y{:}e^y + y: \quad \text{Bild}$$