Coordinate Type	γ	Δ	a	b	$\tan(\theta)$	k^2	Singular Points
Cartesian	0	0	arbitrary	arbitrary	$\begin{cases} 0, & \text{if } C = 0, \\ \dfrac{B - A + \sqrt{(B-A)^2 + 4C^2}}{2C}, & \text{if } C \neq 0. \end{cases}$ (θ unique mod $\pi/2$)	0/0	two at ∞
Parabolic	0	$\neq 0$	$\dfrac{\beta(A - B) + 2\alpha C}{2(\alpha^2 + \beta^2)}$	$\dfrac{\alpha(B - A) + 2\beta C}{2(\alpha^2 + \beta^2)}$	$\begin{cases} \pm\infty, & \text{if } \beta = 0, \\ \alpha/\beta, & \text{if } \beta \neq 0. \end{cases}$ (θ unique mod π)	∞	one at **a**, one at ∞
Polar	$\neq 0$	0	$-\dfrac{\beta}{\gamma}$	$-\dfrac{\alpha}{\gamma}$	arbitrary	0	two coincide at **a**
Elliptic-Hyperbolic	$\neq 0$	$\neq 0$	$-\dfrac{\beta}{\gamma}$	$-\dfrac{\alpha}{\gamma}$	Define $\sigma = \alpha^2 - \beta^2 + \gamma(B - A)$. $\begin{cases} 0, & \text{if } \gamma C + \alpha\beta = 0,\ \sigma < 0, \\ \pm\infty, & \text{if } \gamma C + \alpha\beta = 0,\ \sigma > 0, \\ \dfrac{\sigma + \sqrt{\Delta}}{2(\gamma C + \alpha\beta)}, & \text{if } \gamma C + \alpha\beta \neq 0. \end{cases}$ (θ unique mod π)	$\dfrac{\sqrt{\Delta}}{\gamma^2}$	two distinct

Table 1: Formulae for transformation to separable coordinates

Transformation to separable coordinates:

$$\begin{pmatrix} q^1 \\ q^2 \end{pmatrix} = \begin{pmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{pmatrix} T_\Lambda \begin{pmatrix} u \\ v \end{pmatrix} + \begin{pmatrix} a \\ b \end{pmatrix}$$

Standard coordinate transformations:

$$\begin{aligned} T_C &: \quad x = u,\ y = v \\ T_P &: \quad x = u\cos v,\ y = u\sin v \\ T_{PB} &: \quad x = \tfrac{1}{2}(u^2 - v^2),\ y = uv \\ T_{EH} &: \quad x = k\cosh u\cos v,\ y = k\sinh u\sin v \end{aligned}$$