$$\mathcal{H} = \frac{1}{2} b^{\gamma}_{\gamma}$$

$$\mathcal{K} = \det(\{a_{\alpha\beta}\}) / \det(\{b_{\alpha\beta}\})$$

$$\mathcal{R} \equiv b^{\alpha\beta} b_{\alpha\beta} = c^{\gamma}_{\gamma} = 4\mathcal{H}^2 - 2\mathcal{K}$$