Inscribed Circles - Dragilev Method

Reference: алексей_алексей

https://www.mapleprimes.com/posts/226763-Circle-Inscribed-Between-Smooth-Curves

$R := 1$

$N := 80$

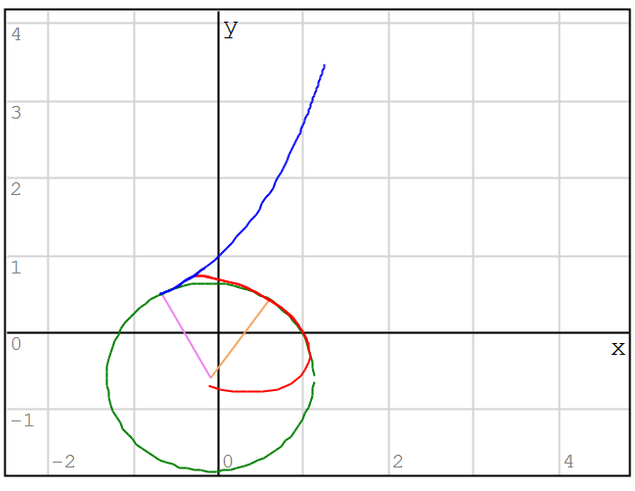
$$f := \begin{bmatrix} f_1 := x_2 - \exp(x_1) & \text{Path one} \\ f_2 := x_3^{\,2} + x_3 \cdot x_4 + 2 \cdot x_4^{\,2} - R^2 & \text{Path two} \\ f_3 := (x_1 - x_5)^2 + (x_2 - x_6)^2 - (x_3 - x_5)^2 - (x_4 - x_6)^2 & \text{Sq. Dist. difference} \\ f_4 := \frac{d}{d\,x_1} f_1 \cdot (x_2 - x_6) - \frac{d}{d\,x_2} f_1 \cdot (x_1 - x_5) & \text{Tg. to one} \\ f_5 := \frac{d}{d\,x_3} f_2 \cdot (x_4 - x_6) - \frac{d}{d\,x_4} f_2 \cdot (x_3 - x_5) & \text{Tg. to two} \\ f_6 := x_1 - 0.5 \cdot x_4 & \text{For starting point} \end{bmatrix}$$

$n := \text{length}(f) - 1 \qquad m := n + 1 \qquad \mu := [1..m] \qquad r := [1..n] \qquad c := r \qquad \tau := [1..(N+1)]$

$$f(u) := \left| \begin{matrix} [x_1\ x_2\ x_3\ x_4\ x_5\ x_6] := u^{\mathrm{T}} \\ f \end{matrix} \right| \qquad X_\mu := x_\mu \qquad \Phi := f(X)$$

$$\Delta_\mu := \text{eval}\left((-1)^{\mu \neq n+1}\right) \cdot \left| J_{r\,c} := \frac{d}{d\ \#x\# := X} \text{eval}\left(\begin{matrix} \text{if } c = \mu \\ n+1 \\ \text{else} \\ c \end{matrix}\right) \Phi_r \right| \qquad D(t, x) := \text{eval}\left(\frac{\Delta}{\text{norme}(\Delta_\mu)}\right)$$

$Xo := \text{al\_nleqsolve}(\text{eval}(\text{matrix}(m, 1)), f(u)) \qquad X := \text{dn\_AdamsMoulton}(Xo, 0, -15, N, D)_{\tau\,1+\mu}$



Alvaro

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