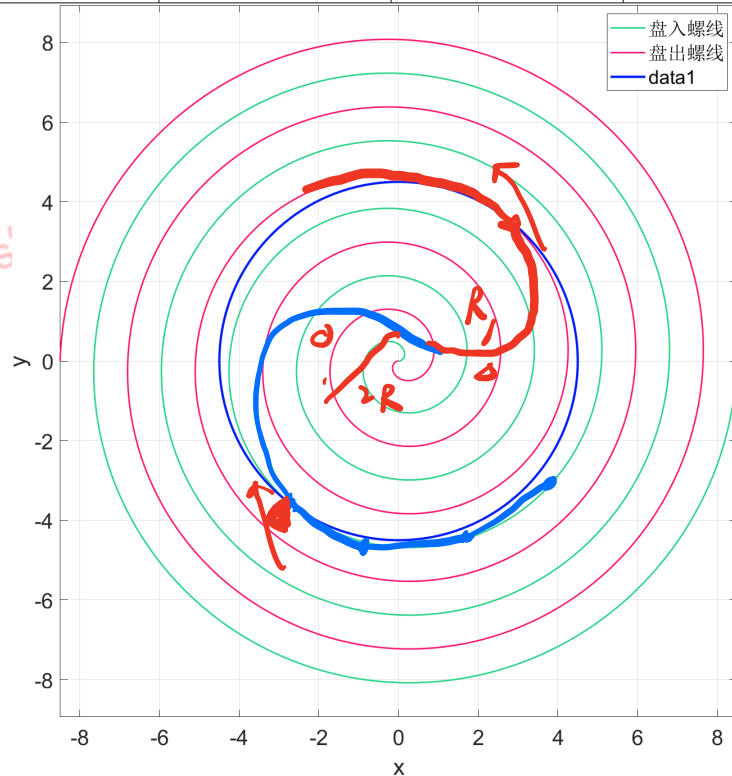
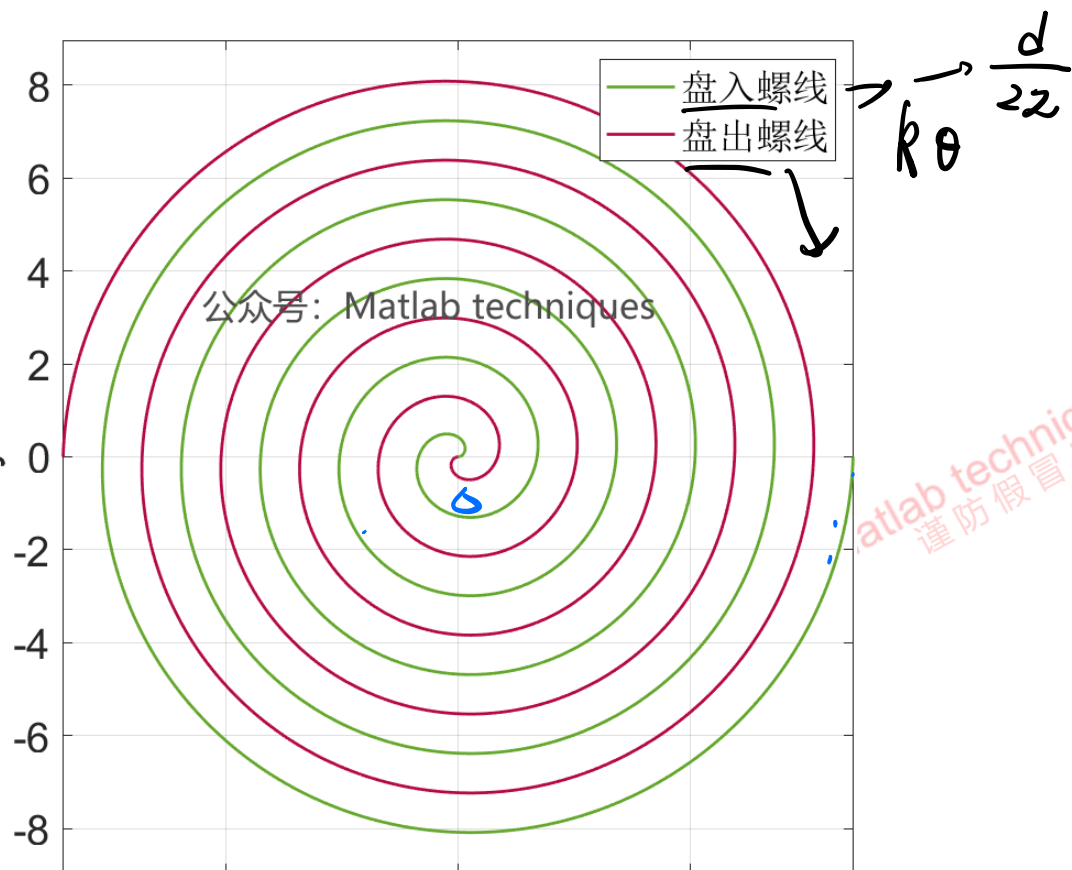
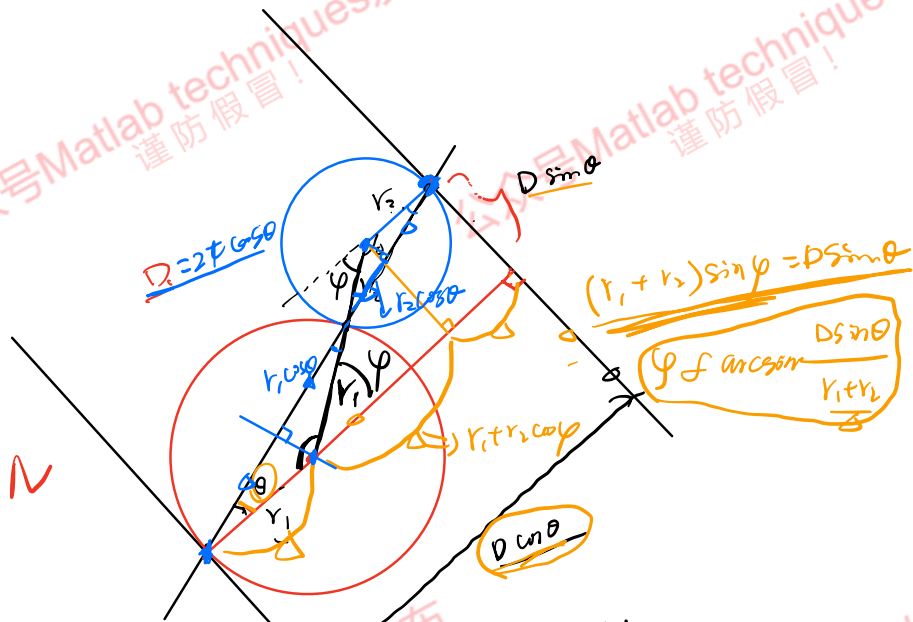
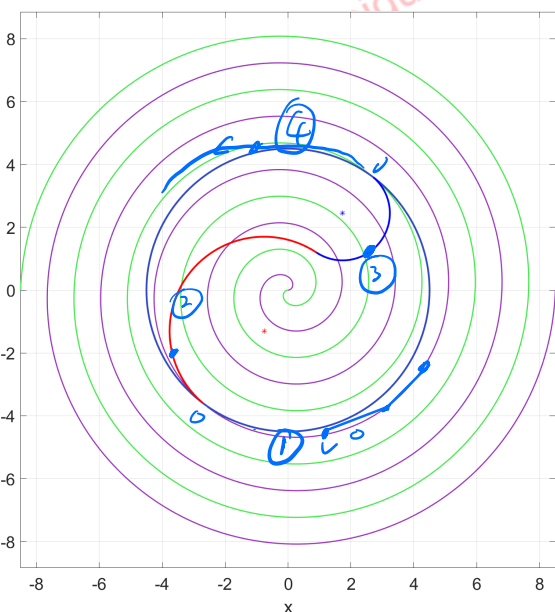


24 数模国赛 A 题四 - 详解!

(史上最难编程问题!)





$$r_1 + r_2 + (r_1 + r_2) \cos \phi = D \cos \theta$$

$$t + t \cos \phi = D \cos \theta$$

$$t \sin \phi = D \sin \theta$$

$$S = (r_1 + r_2) (z - y)$$

$$t = \frac{r_1 + r_2}{\sin \theta} = \frac{D \sin \theta}{\sin \theta} = D$$

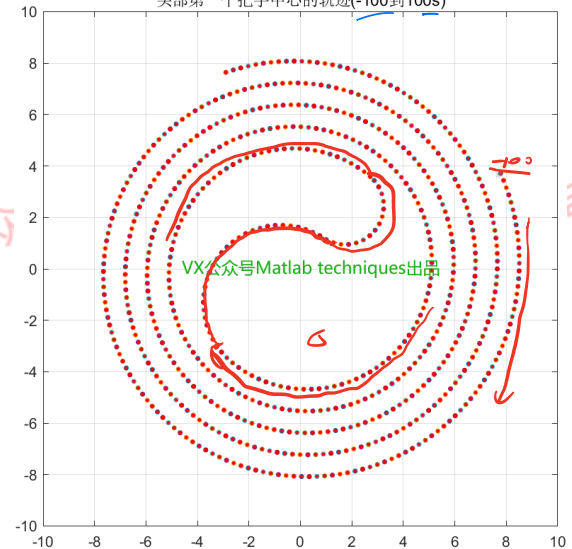
$$t = \frac{D \cos \theta}{\cos \theta} = D$$

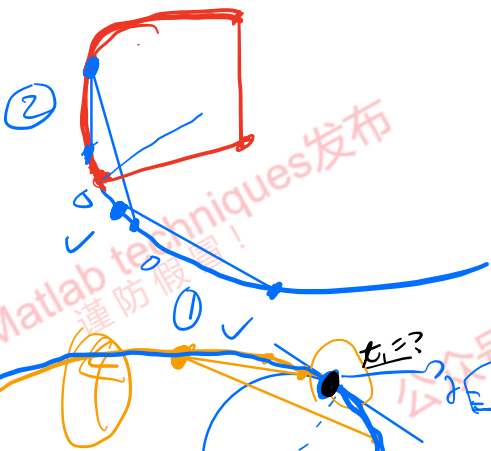
$$(D \cos \theta - t)^2 + D^2 \sin^2 \theta = D^2$$

$$= D^2 + t^2 - 2tD \cos \theta$$

$$t = \frac{D}{2 \cos \theta} = \frac{R}{\cos \theta}$$

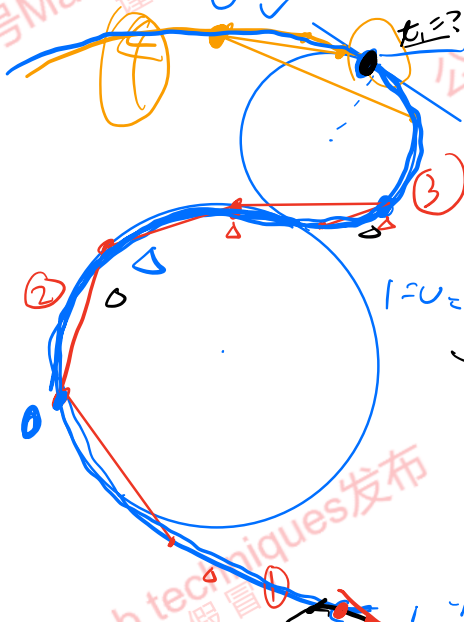
t=199.8
VX 公众号 Matlab techniques 出品
头部第一个把手中心的轨迹(-100到100s)





$$-100 \sim 100$$

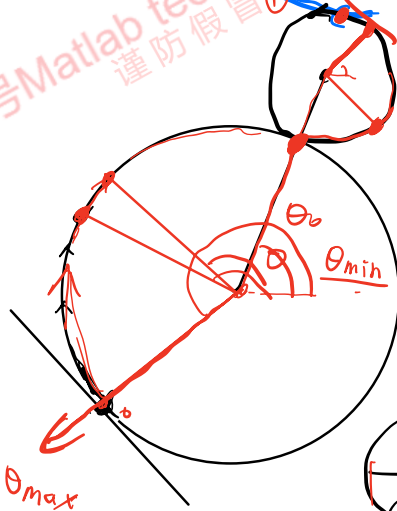
$$\frac{d\theta}{dt} \sim \frac{-a}{\sqrt{r^2 \cos^2(\theta) + 1}}$$



$$k(\theta + \pi)$$

$$\frac{ds}{d\theta} \sim \sqrt{r^2 + r'^2} d\theta = k \sqrt{1 + (\theta + \pi)^2} d\theta$$

$$1 = v = \frac{ds}{dt} \sim \frac{ds}{d\theta} \frac{d\theta}{dt}$$



$$1 = \frac{ds}{dt} = \frac{d(r \cdot \theta)}{dt} = r \cdot \frac{d\theta}{dt}$$

$$\left| \frac{d\theta}{dt} \right| = \frac{1}{r}$$

$$\theta = \frac{1}{r} t + k$$

$$\theta = -\frac{1}{r} t + \theta_0$$

$$t = 0, d\theta, \dots$$

$$\theta_i(x_i, y_i)$$

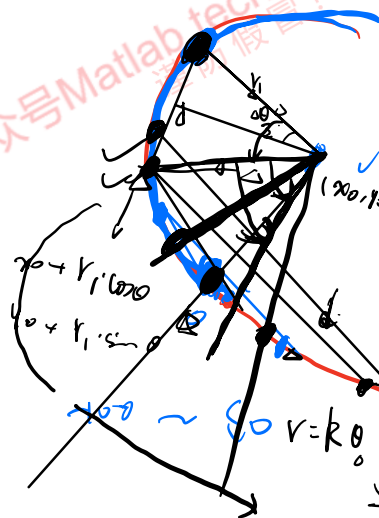
$$69-129$$

$$-100 \sim 100$$

32

ti

$x_1 \checkmark$
 $y_5 \checkmark$



x

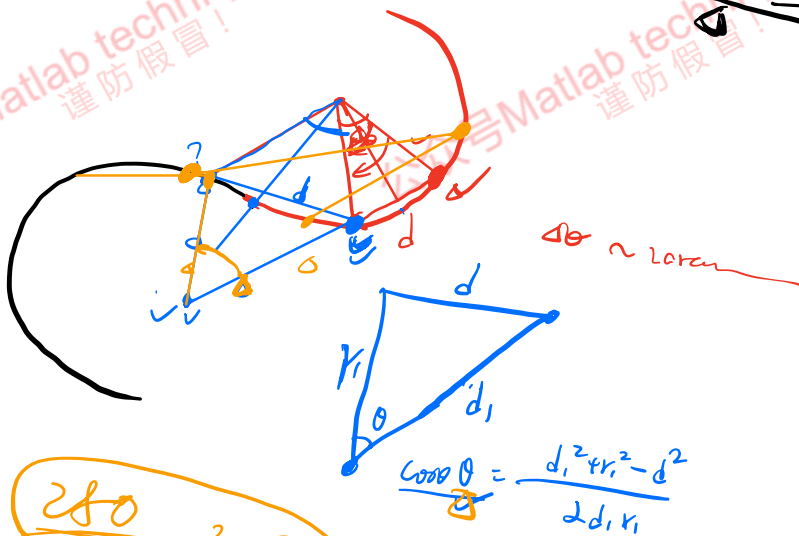


$$\sin \frac{\Delta \theta}{2} = \frac{d}{2r_1}$$
$$\frac{\Delta \theta}{2} = \arcsin \frac{d}{2r_1}$$

$$f(\theta) = d^2 - 2r_1^2 \cos \theta = 0$$

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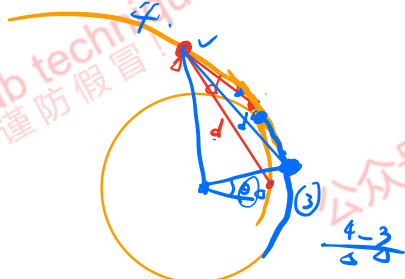
Solve - p = sin t - 2 - 1



$\Delta \theta \sim 2 \arcsin \frac{d}{2r_1}$

280

3-2



4-3