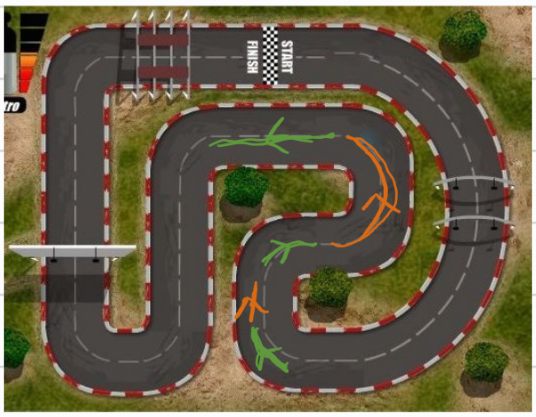
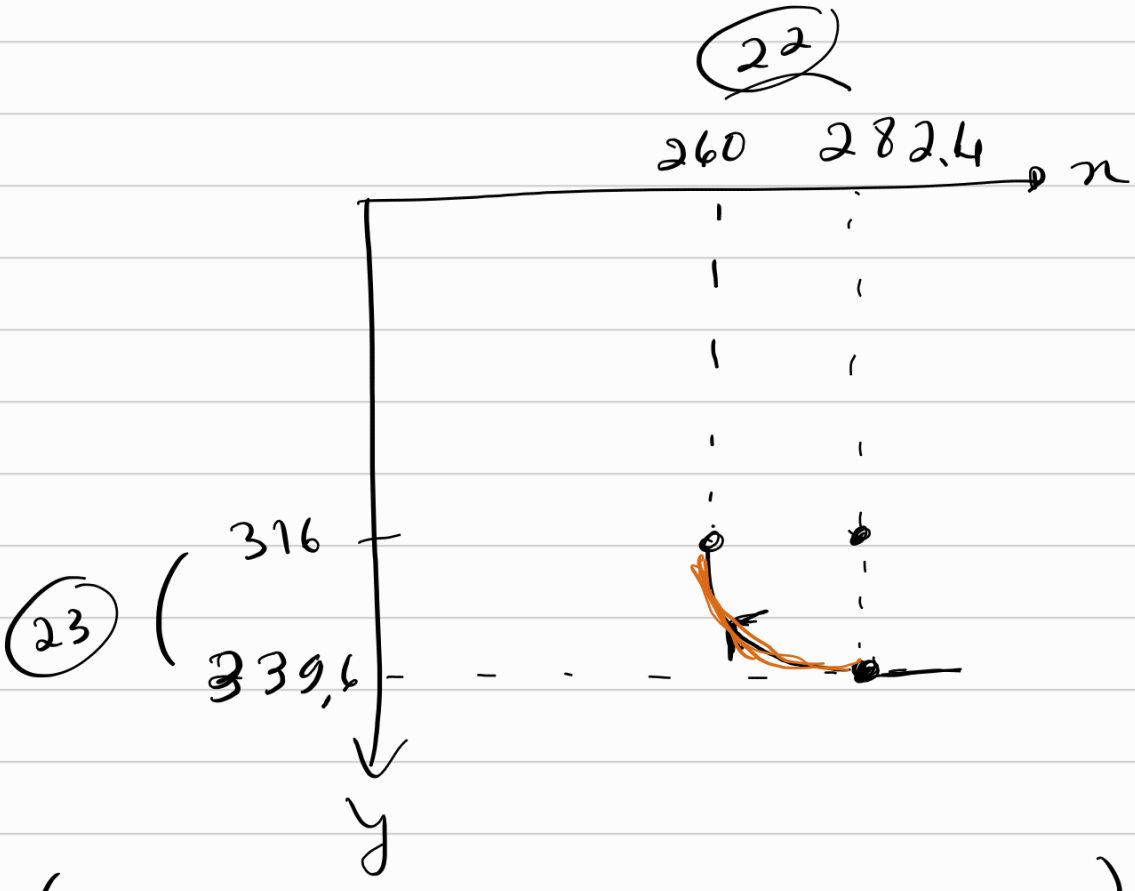


Parametrizar das linhas a laranja e verde



$$\vec{R}(t) = (282 + 22\cos(t),\ 340 + 22\sin(t))$$

vel = 22 $\quad t \in [\pi/2, \pi]$

⇓

vel = 5,5 × 22 = 121

$$\vec{R}(t) = (282 + 22\cos(5{,}5t);\ 340 + 22\sin(5{,}5t))$$

0,3

0,28 $\quad$ 0,57

$$t \in \left(\frac{\pi}{2\times 5{,}5},\ \frac{\pi}{5{,}5}\right)$$

$$\vec{R}'(t) = (-22\sin(5{,}5t)\times 5{,}5,\ 22\cos(5{,}5t)\,5{,}5)$$

$$\sqrt{121^2 \sin^2 + 121^2 \cos^2(t)} = 121$$

Começa em $t = 3,9$

$$R(t) = (282 + 22\cos(5,5(t-3,62)); 340 + 22\sin(5,5(t-3,62)))$$

$$t \in [3,9 \overset{0,3}{;} 4,2]$$

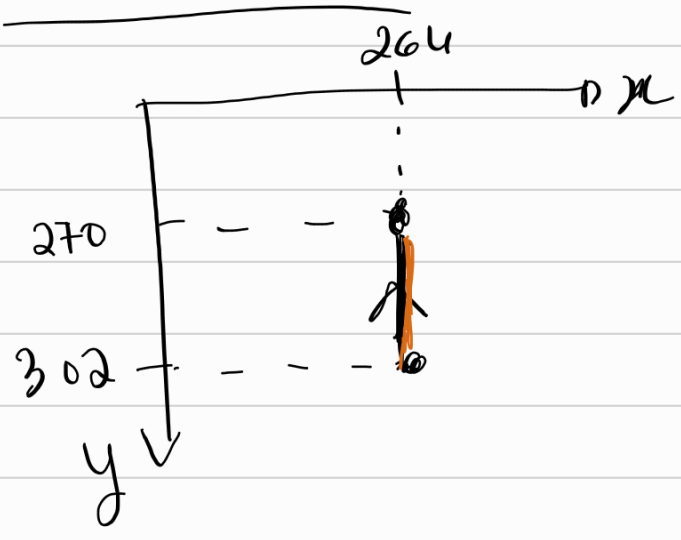
ajuste:

$$\vec{R}(t) = (282 + 22\cos(5,5(t-3,62)); 320 + 22\sin(5,5(t-3,62)))$$

$$t \in [3,9; 4,3]$$

termina em $t = 4,3$: $(264, 302)$

Reta



$$\vec{R}(t) = (264, t) \quad t \in [270, 302]$$

inverse:

$\vec{R}^*(t) = (264, -t) \qquad t \in [-302, -270]$

velocidade 250

$R(t) = (264, -250t) \qquad t \in \left[-\frac{302}{250}, \frac{-270}{250}\right]$

$t \in [1{,}2 \; ; \; -1{,}1]$

· tempo contínuo

$R(t) = (264, -250(t-5{,}5)) \qquad t \in [4{,}3 \; ; \; 4{,}4]$

ajuste:

$R(t) = (250, -250(t-5{,}5)) \qquad t \in [4{,}3 \; ; \; 4{,}4]$

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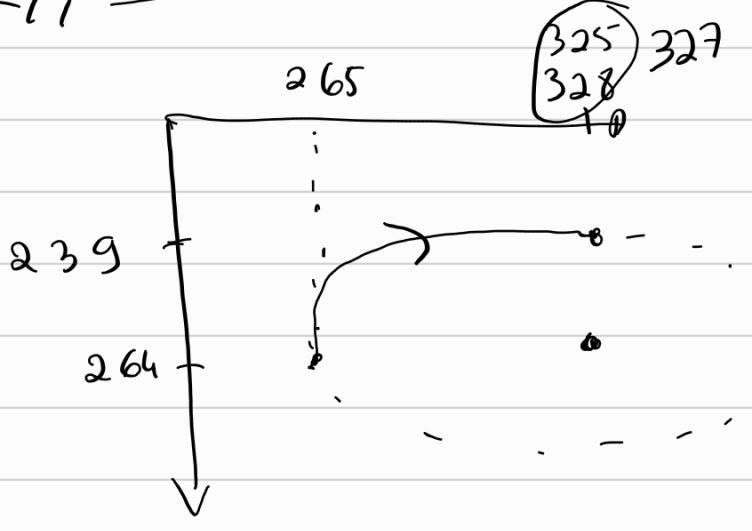
elipse



$\vec{R}(t) = (327 + 42\cos(t), 264 + 25\sin(t))$

$t \in \left[\pi, \frac{3\pi}{2}\right]$

velocidade : 125

$3 \times 42 = 126$

$3 \times 25 = 75$

$$\vec{R}(t) = (327 + 42\cos(3t), 264 + 25\sin(3t))$$

$$t \in \left[\frac{\pi}{3}, \frac{3\pi}{6}\right]$$

$$= \left[\frac{\pi}{3}, \frac{\pi}{2}\right]$$

$$= [1 ; 1{,}6]$$

tempo contínuo:

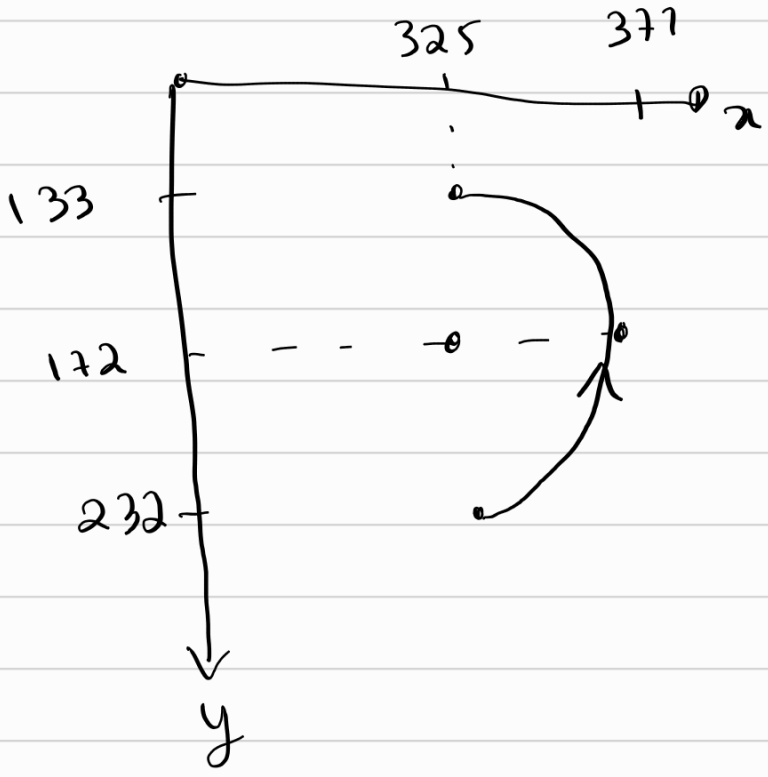
$$\vec{R}(t) = (327 + 42\cos(3(t-3.4)) ; 264 + 25\sin(3(t-3.4)))$$

$$t \in [4{,}4 ; 5]$$

ajuste:

$$\vec{R}(t) = (305 + 42\cos(3(t-3.4)) ; 254 + 25\sin(3(t-3.4)))$$

$$t \in [4.4, 5]$$



$$\vec{R}(t) = (325 + 46\cos(t),\ 172 + 40\sin(t)) \qquad t \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$$

inverse

$$\vec{R}(t) = (325 + 46\cos(-t),\ 172 + 40\sin(-t))$$

$$t \in [-1{,}6;\ 1{,}6]$$

velocidade (125)

$46 \times 3 = 138$

$40 \times 3 = 120$

$$\vec{R}(t) = (325 + 46\cos(-3t),\ 172 + 40\sin(-3t))$$

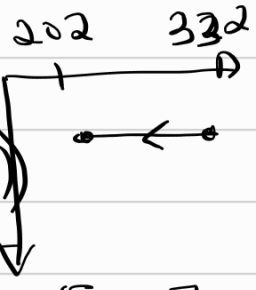
$$t \in [-0{,}5;\ 0{,}5]$$

Tempo contínuo

$$\vec{R}(t) = (325 + 46\cos(-3(t-5.5)),\ 172 + 40\sin(-3(t-5.5)))$$

$t \in [5,6]$

Segmento de reta: $(332, 120)$ A
$(202, 124)$ B



$$\vec{R}(t) = (332,120) + t((202,124) - (332,120))$$

$$\vec{R}(t) = (332,120) + t(-130,-4) \qquad t \in [0,1]$$

$$\vec{R}(t) = (332 - 130t,\ 120 - 4t) \qquad t \in [0,1]$$

velocidade

$$R'(t) = (-130, -4)$$

$$\|R'(t)\| = \sqrt{(-130)^2 + (-4)^2} = \sqrt{16\,916} =$$

$$= 130$$

Percurso 250.

$$130x = 250$$

$$x = \frac{250}{130} = 1.9$$

$$\vec{R}(t) = (332 - 130(1.9t), 120 - 4(1.9t))$$

$$t \in \left[\frac{0}{1.9}, \frac{1}{1.9}\right]$$

$$t \in [0 ; 0{,}52]$$

tempo contínuo

$$\vec{R}(t) = (332 - 130(1.9(t-6)), 120 - 4(1{,}9(t-6))$$

$$t \in [6; 6{,}52]$$