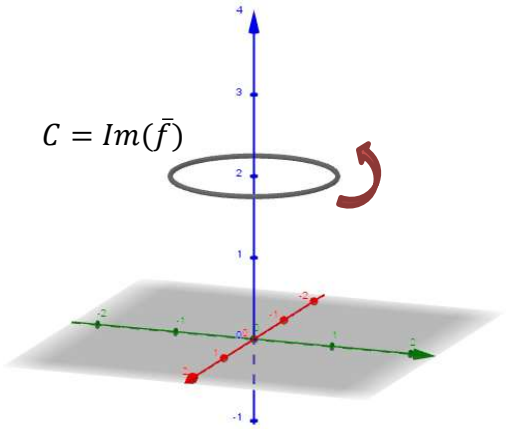
1. a) (0, 9); (9,0) b) (4, 5) d) A los 2 segundos; nunca e) $y = -x + 9,\ 0 \le x \le 9$

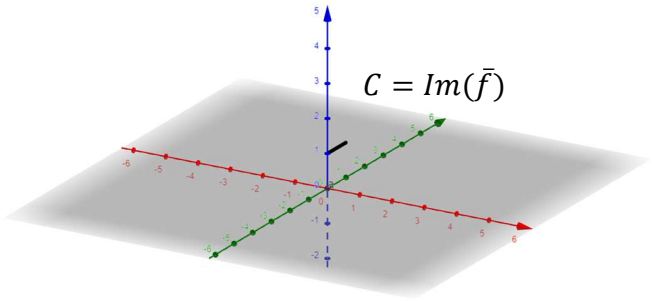
2. 1) $\frac{x^2}{4} + \frac{y^2}{9} = 1,\ y \ge 0$ 2) y = x, $x \ge 0$ 3) i. $x^2 + y^2 = 9$ ii. $x^2 + y^2 = 9,\ 0 \le x \le 3$

4) $y = -x^2 + 1, x > 0$ 5) $y = (x+1)^2 + 2,\ x \ge -1$

8)



9)



3. La función 2) se corresponde con γ_2; la curva γ_1 con la función 4); la función 5) se corresponde con γ_3

4. a. $\bar{f}(t) = \begin{cases} (t,\ 2t) & 0 \le t \le 1 \\ (t,\ 2) & 1 < t \le 3 \end{cases}$ b. $\bar{f}: \left[-\frac{\pi}{2}; \frac{\pi}{2}\right] \to R^2 / \bar{f}(t) = (2\cos t\,; 2sent)$

c. $\bar{f}: [0; \pi] \to R^2 / \bar{f}(t) = (-3\cos t\,; 3sent)$

5. a. x(t) = cos (2t), y(t) = sen(2t) con $\frac{\pi}{4} \le t \le \frac{9\pi}{4}$

b. x(t) = cos t, y(t) = sen t con $0 \le t \le \frac{\pi}{2}$

6. a. $\bar{f}(t) = (t; t^2 - 3t)\ \ t \in R$ b. $\bar{f}: \left[\frac{\pi}{2}; \frac{3\pi}{2}\right] \to R^2 / \bar{f}(t) = (5\cos t\,; 5sent)$ c. $\bar{f}(t) = \left(\frac{1}{3}\cos t\,; \text{sen}\, t\right)\ \ t \in R$

d. $\bar{f}: [-1; 1] \to R^2 / \bar{f}(t) = (t^2; t)$

e. $\bar{f}: [0; 2\pi] \to R^2 / \bar{f}(t) = (\cos(t) - 1; sen(t))$ f. $\bar{f}: [\pi; \frac{3\pi}{2}] \to R^2 / \bar{f}(t) = (\sqrt{2}\cos(t)\,; \sqrt{3}sen(t))$

g. $\bar{f}: (-\sqrt{5}; \sqrt{5}) \to R^2 / \bar{f}(t) = (t; 2t)$

7. $a. \bar{f}: R \to R^3 / \bar{f}(t) = (\cos t\,; sent; 5)$ $b. \bar{f}: R \to R^3 / \bar{f}(t) = \left(3\sqrt{2}\cos t\,; 3\sqrt{2}sent; 3\sqrt{2}\right)$

$c. \bar{f}: R \to R^3 / f(t) = (t; 0; 1 - t)$ $d. \bar{f}: R \to R^3 / \bar{f}(t) = (t; 4 - t; 4 - t^2)$

$e. \bar{f}: [0; 2] \to R^3 / \bar{f}(t) = (t; 4 - t; 4 - t^2)$

8. a. v(1) = (2; 1) , a(1) = (2 ; 0) , b. v(3) = (2; -1) , a(3) = (0; 0) , c. v(4) = (0; -32; 24) , a(4) = (0; -8; 6)

9. No se encuentran en ningún instante *t*.

10. Se encuentran en el instante *t* = 1

11. a

a. $(x; y) = (1; 1) + \lambda(1; 2)$, $\lambda \in R$ b. $(x; y) = (\sqrt{2}; \sqrt{2}) + \lambda(-\sqrt{2}; \sqrt{2}), \lambda \in R$

c. $(x; y; z) = (r; 4; 0) + \lambda(0; 0; r), \lambda \in R$ d.. $(x; y; z) = (\sqrt{2}; \sqrt{2}; 1) + \lambda(-\sqrt{2}; \sqrt{2}; 0), \lambda \in R$

12. $g: R \to R^2 / g(t) = (-1 + 2cost, 3 + 2sen\, t)$, $(x, y) = (1, 3) + \alpha(0, 2)$, $\alpha \in R$

13. a. $\bar{f}(t) = \left(-\frac{1}{t} + 4; -\frac{\cos(2t-2)+1}{2}\right)$, b. $\bar{f}(t) = \left(\frac{1}{2t^4} + \frac{1}{2}; \frac{3}{8}\sqrt[3]{(t^2+7)^4} + 1; t\ln t - t + 1\right)$

14. Área = $3.76\ aproximadamente$

15. Área = 36.59