1. a) Escalar b)Vectorial c)Vectorial d) Escalar

2. a)$Dom\ F = \{(x,y) \in R^2 / x^2 + y^2 \leq 4\}$
   b)$DomF = \{(x,y) \in R^2 / 2x + 3y < 8\}$
   c) $Dom\ F = R^2$
   d)$DomF = \{(x,y) \in R^2 / y \neq x + 3\}$

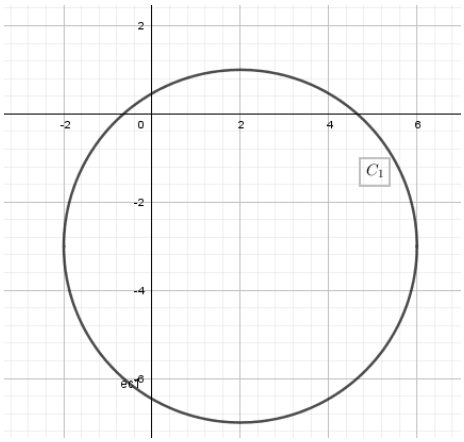
3. a.$C_{-1} = \{(x,y) \in Dom(F) / x - 3y = -1\}$, $C_0 = \{(x,y) \in Dom(F) / x - 3y = 0\}$,
   $C_1 = \{(x,y) \in Dom(F) / x - 3y = 1\}$

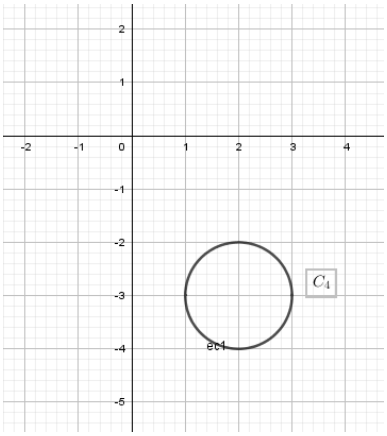
   b. $C_{-1} = \left\{(x,y) \in Dom(F) / \frac{2}{x-y} = -1\right\}$, $C_0 = \emptyset$, $C_{-1} = \left\{(x,y) \in Dom(F) / \frac{2}{x-y} = 1\right\}$

   c. $C_{-1} = \left\{(x,y) \in Dom(F) / \frac{y}{x^2-1} = -1\right\}$, $C_0 = \left\{(x,y) \in Dom(F) / \frac{y}{x^2-1} = 0\right\}$
   $C_1 = \left\{(x,y) \in Dom(F) / \frac{y}{x^2-1} = 1\right\}$

   d. $C_{-1} = \emptyset$, $C_0 = \left\{(x,y) \in Dom(F) / \sqrt{25 - x^2 - y^2} = 0\right\}$, $C_1 = \left\{(x,y) \in Dom(F) / \sqrt{25 - x^2 - y^2} = 1\right\}$

4. $C_1 = \left\{(x,y) \in Dom(V) \Big/ \frac{4}{\sqrt{(x-2)^2+(y+3)^2}} = 1\right\}$, $C_4 = \left\{(x,y) \in Dom(V) \Big/ \frac{4}{\sqrt{(x-2)^2+(y+3)^2}} = 4\right\}$





5. A) $y = x^2 + 3,\ x \in [0,1]$
   b) $x^2 + y^2 = 2$
   c)$\frac{x^2}{4} + \frac{y^2}{9} = 1, y \geq 0$
   d)$y = x,\ x \geq 0$
   e) i. $x^2 + y^2 = 9$ ii. $x^2 + y^2 = 9,\ 0 \leq x \leq 3$

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. $\bar{f}(t) = \left(\frac{1}{3}\cos t\,; \operatorname{sen} t\right)\ \ t \in R$
   d. $\bar{f}: [0,1] \to R / \bar{f}(t) = (t,\ t^3)$

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

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

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

7. No se encuentran en ningún instante t

8. Se encuentran en t =1

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

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

10. a. $Dom\ F = R^2$ b. $Dom\ F = R^2 - \{(0,0)\}$ c. $DomF = R^2$

11. ai. $z = x^2 + y^2$ (paraboloide circular)
    ii. $z = x^2 + y^2, \quad z \leq 1$
    b. $z = 1 - x - y$ (plano)
    c. $x^2 + y^2 + z^2 = 1$ (esfera de radio 1 y centro (0,0,0))
    di. $x^2 + y^2 = 1$ (cilindro circular)
    ii. $x^2 + y^2 = 1, \quad 0 \leq x \leq 1, -1 \leq y \leq 1, 1 \leq z \leq 2$
    e. $z = (x-1)^2 + 2y^2$ (paraboloide elíptico)

12. a. $\bar{F}: R^2 \to R^3 / \bar{F}(u, v) = (u; v; -2u + v + 3)$ b. $\bar{F}: R^2 \to R^3 / \bar{F}(u, v) = (u; v; u^2 + v^2)$

c. $\bar{F}: R^2 \to R^3 / \bar{F}(u, v) = \left(u; v; \sqrt{u^2 + v^2}\right)$
d. $\bar{F}: R^2 \to R^3 / \bar{F}(u, v) = (3\cos(u); 3sen(u); v)$
e. $\bar{F}: D \subseteq R^2 \to R^3 / \bar{F}(u, v) = (2\cos(u) sen(v); 2sen(u) sen(v); 2\cos(v))$
f. $\bar{F}: D \subseteq R^2 \to R^3 / \bar{F}(u, v) = (3\cos(u); 3sen(u); v)$
   $D = \left\{(u, v) \in R^2 / 0 \leq u \leq \frac{\pi}{2}, v \geq 0\right\}$