

Universidad Nacional de Loja

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Fecha: 01/05/2023

Tema: Introducción a ecuaciones diferenciales

Curso: 4to "A" → Ing. en Computación

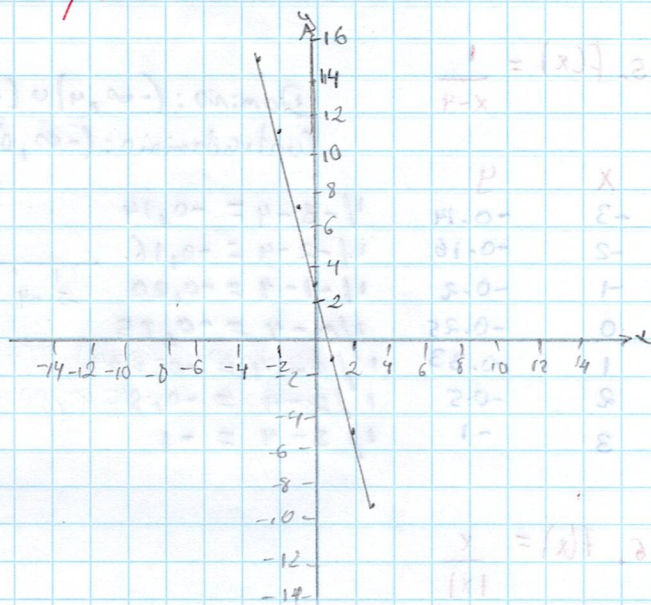
- Trace la gráfica y determine el dominio y contradominio de f.

1. $f(x) = -4x + 3$

x	y	
-3	15	$-4(-3) + 3 = +12 + 3 = 15$
-2	11	$-4(-2) + 3 = +8 + 3 = 11$
-1	7	$-4(-1) + 3 = 4 + 3 = 7$
0	3	$0 + 3 = 3$
1	-1	$-4 + 3 = -1$
2	-5	$-4(2) + 3 = -8 + 3 = -5$
3	-9	$-4(3) + 3 = -12 + 3 = -9$

Dominio: $(-\infty, +\infty)$

Contradominio: $(-\infty, +\infty)$

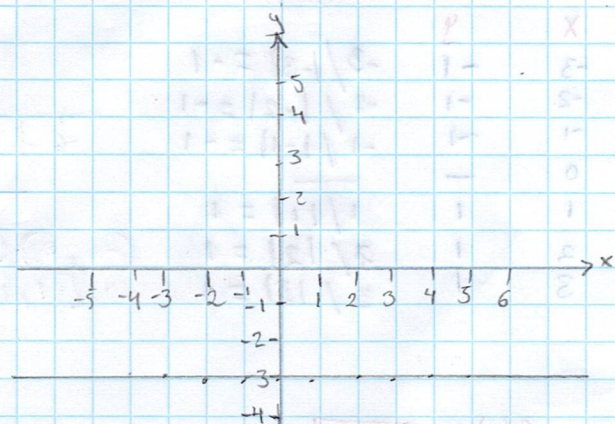


2. $f(x) = -3$

x	y	
-3	-3	
-2	-3	
-1	-3	
0	-3	
1	-3	
2	-3	
3	-3	

Dominio: $(-\infty, +\infty)$

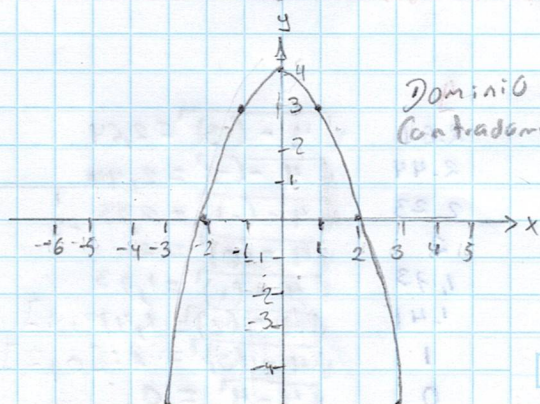
Contradominio: $[-3]$



3. $f(x) = 4 - x^2$

x	y	
-3	-5	$4 - (-3)^2 = -5$
-2	0	$4 - (-2)^2 = 0$
-1	3	$4 - (-1)^2 = 3$
0	4	$4 - (0)^2 = 4$
1	3	$4 - (1)^2 = 3$
2	0	$4 - (2)^2 = 0$

Dominio: $(-\infty, +\infty)$
Contradominio: $(-\infty, 4]$



4. $f(x) = \sqrt{4-x^2}$

x	y
-3	-
-2	0
-1	1,73
0	2
1	1,73
2	0
3	-

$$\sqrt{4 - (-3)^2} = -$$

$$\sqrt{4 - (-2)^2} = 0$$

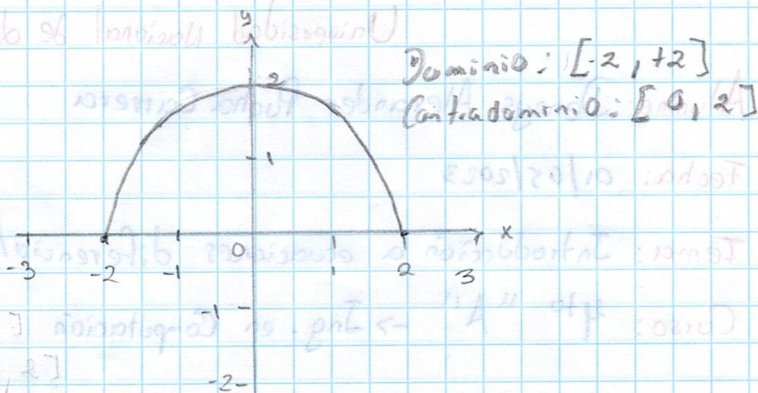
$$\sqrt{4 - (-1)^2} = 1,73$$

$$\sqrt{4 - (0)^2} = 2$$

$$\sqrt{4 - (1)^2} = 1,73$$

$$\sqrt{4 - (2)^2} = 0$$

$$\sqrt{4 - (3)^2} = -$$



5. $f(x) = \frac{1}{x-4}$

x	y
-3	-0,14
-2	-0,16
-1	-0,2
0	-0,25
1	-0,33
2	-0,5
3	-1

$$\frac{1}{-3-4} = -0,14$$

$$\frac{1}{-2-4} = -0,16$$

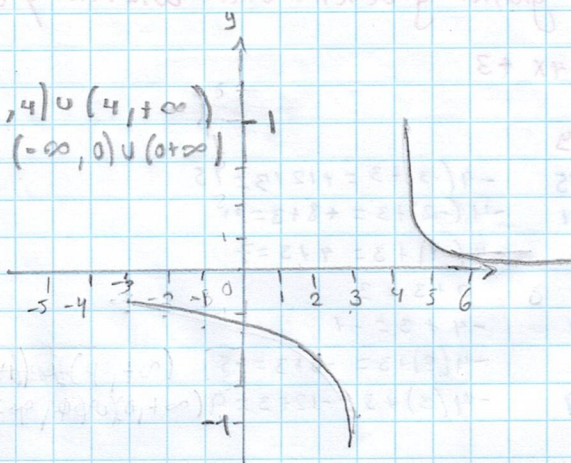
$$\frac{1}{-1-4} = -0,20$$

$$\frac{1}{0-4} = -0,25$$

$$\frac{1}{1-4} = -0,33$$

$$\frac{1}{2-4} = -0,5$$

$$\frac{1}{3-4} = -1$$



6. $f(x) = \frac{x}{|x|}$

x	y
-3	-1
-2	-1
-1	-1
0	-
1	1
2	1
3	1

$$\frac{-3}{|-3|} = -1$$

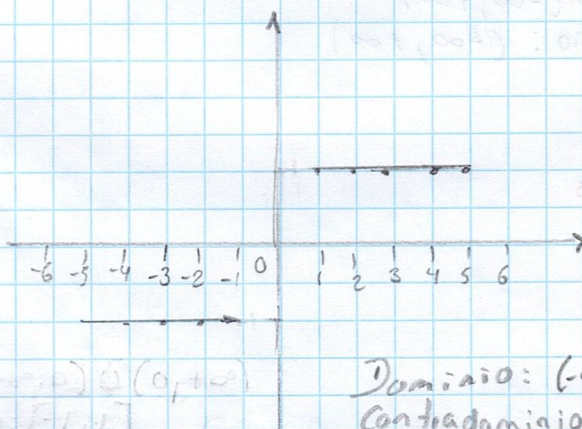
$$\frac{-2}{|-2|} = -1$$

$$\frac{-1}{|-1|} = -1$$

$$\frac{1}{|1|} = 1$$

$$\frac{2}{|2|} = 1$$

$$\frac{3}{|3|} = 1$$



7. $f(x) = \sqrt{4-x}$

x	y
-3	2,64
-2	2,44
-1	2,23
0	2
1	1,73
2	1,41
3	1
4	0

$$\sqrt{4 - (-3)} = 2,64$$

$$\sqrt{4 - (-2)} = 2,44$$

$$\sqrt{4 - (-1)} = 2,23$$

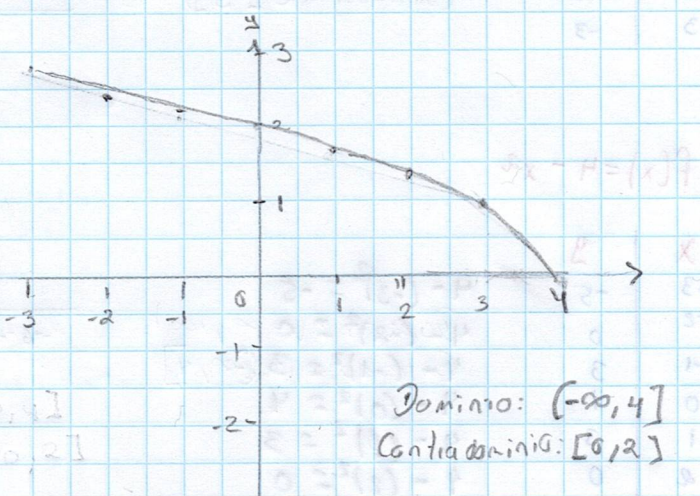
$$\sqrt{4 - (0)} = 2$$

$$\sqrt{4 - (1)} = 1,73$$

$$\sqrt{4 - (2)} = 1,41$$

$$\sqrt{4 - (3)} = 1$$

$$\sqrt{4 - (4)} = 0$$



• Calcular el límite si existe

$$1. \lim_{x \rightarrow -2} (3x^2 - 2x + 7) = 3(-2)^2 - 2(-2) + 7 = (12 + 4 + 7) = 23$$

$$2. \lim_{x \rightarrow \sqrt{2}} (x^2 + 3)(x - 4) = ((\sqrt{2})^2 + 3)(\sqrt{2} - 4) = (2 + 3)(\sqrt{2} - 4) \\ = (5)(\sqrt{2} - 4) = 5\sqrt{2} - 20$$

$$3. \lim_{x \rightarrow 4} \sqrt[3]{x^2 - 5x - 4} = \sqrt[3]{(4)^2 - 5(4) - 4} = \sqrt[3]{16 - 20 - 4} \\ = \sqrt[3]{16 - 24} = \sqrt[3]{-8} = -2$$

$$4. \lim_{x \rightarrow 2} \frac{x-2}{x^3-8} = \frac{2-2}{2^3-8} = \frac{0}{0} \quad \text{Indefinición}$$

$$= \lim_{x \rightarrow 2} \frac{(x-2)}{(x-2)(x^2-x+2)} = \frac{1}{x^2+x+2} = \frac{1}{x^2+2x+4}$$

$$= \lim_{x \rightarrow 2} \frac{1}{x^2+2x+4} = \frac{1}{2^2+2(2)+4} = \frac{1}{4+4+4} = \frac{1}{16}$$

$$5. \lim_{x \rightarrow 16} \frac{x-16}{\sqrt{x}-4} = \frac{16-16}{\sqrt{16}-4} = \frac{0}{4-4} = \frac{0}{0} \quad \text{Indefinición}$$

$$\lim_{x \rightarrow 16} \frac{(x^{0,5})^2 - 4^2}{\sqrt{x} - 4} = \frac{(x^{0,5} + 4)(x^{0,5} - 4)}{\sqrt{x} - 4} = \frac{(\sqrt{x} - 4) \cdot (\sqrt{x} + 4)}{\sqrt{x} - 4}$$

$$\lim_{x \rightarrow 16} (\sqrt{x} + 4) = \sqrt{16} + 4 = 4 + 4 = 8$$

$$6. \lim_{s \rightarrow 4} \frac{6s-1}{2s-9} = \frac{6(4)-1}{2(4)-9} = \frac{24-1}{8-9} = \frac{23}{-1} = -23$$