

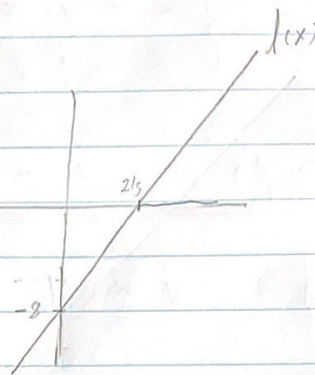
Nome: FELIPE ANCHIENGO DA CUNHA MENDES

RA: 2252740

1. a)  $y = 2x - 3$

x	y
-2	-8
-1	-5
0	-3
1	-1
2	1

$D(f) = \mathbb{R}$  //



b)  $y = -x^3 + 4x^2 + 2x + 4$

$D(f) = \mathbb{R}$  //

c)  $y = \frac{1}{x-9}$

C.E:  $x - 9 \neq 0 \therefore x \neq 9$

$D(f) = \mathbb{R} - \{9\} = ]-\infty, 9[ \cup ]9, +\infty[$  //

d)  $y = \frac{x+1}{x}$

C.E:  $x \neq 0$

$D(f) = ]-\infty, 0[ \cup ]0, +\infty[$  //

$$e) y = \frac{x^2 - 9}{x^2 - 16} = \frac{(x+3)(x-3)}{(x+4)(x-4)}$$

$$C.E: \begin{cases} x+4 \neq 0 \therefore x \neq -4 \\ x-4 \neq 0 \therefore x \neq 4 \end{cases}$$

$$D(f) = ]-\infty, -4[ \cup ]-4, 4[ \cup ]4, +\infty[ //$$

$$f) y = \sqrt{x-4}$$

$$C.E: x-4 \geq 0 \therefore x \geq 4$$

$$D(f) = [4, +\infty[ //$$

$$g) y = \sqrt{\frac{x+1}{x-1}}$$

$$C.E: x-1 \neq 0 \therefore x \neq 1$$

$$\frac{x+1}{x-1} \geq 0 \rightarrow \begin{matrix} x+1 \geq 0 \therefore x \geq -1 \\ x-1 > 0 \therefore x > 1 \end{matrix} \rightarrow x > 1$$

$$\rightarrow \begin{matrix} x+1 \leq 0 \therefore x \leq -1 \\ x-1 < 0 \therefore x < 1 \end{matrix} \rightarrow x \leq -1$$

$$D(f) = ]-\infty, -1] \cup ]1, +\infty[ //$$



$$2. f(x) = \frac{x^2 - 2}{x + 1}$$

$$a) f(0) = \frac{0^2 - 2}{0 + 1} = \frac{-2}{1} \therefore \boxed{f(0) = -2} //$$

$$b) f(-2) = \frac{(-2)^2 - 2}{-2 + 1} = \frac{2}{-1} \therefore \boxed{f(-2) = -2} //$$

$$c) f(\sqrt{2}) = \frac{(\sqrt{2})^2 - 2}{\sqrt{2} + 1} = \frac{0}{\sqrt{2} + 1} \therefore \boxed{f(\sqrt{2}) = 0} //$$

$$d) f\left(\frac{1}{x}\right) = \frac{\left(\frac{1}{x}\right)^2 - 2}{\frac{1}{x} + 1} = \frac{\frac{1}{x^2} - 2}{\frac{1}{x} + 1} \therefore \boxed{f\left(\frac{1}{x}\right) = \frac{\frac{1}{x^2} - 2}{\frac{1}{x} + 1}} //$$

$x \neq 0 \text{ e } x \neq -1$

$$3. f(x) = |x| - 2x$$

CALCULANDO  $f(-1)$ :

$$+ f(-1) = -1 - 2(-1) \quad * \quad f(-1) = -1 - 2(-1)$$

$$* f(-1) = |-1| - 2(-1)$$

$$\therefore x = -1 \Rightarrow 1 + 2 = 3$$

$$\therefore f(-1) = 3$$

$$f(x) = -3x^{-1}$$

CALCULANDO  $f(2)$ :

$$f(2) = 2 - 2(2)$$

$$f(2) = 2 - 4 = -2$$

$$\therefore f(2) = -2$$

CALCULANDO  $f\left(\frac{1}{2}\right)$ :

$$* f\left(\frac{1}{2}\right) = \left|\frac{1}{2}\right| - 2\left(\frac{1}{2}\right)$$

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

$$f\left(\frac{1}{2}\right) = -\frac{1}{2}$$



Mostrando que  $f(1a) = -1a$

$$\begin{aligned} * f(1a) &= |1a| - 2|a| \\ &= a - 2a = -a \quad \therefore f(1a) = -a \end{aligned}$$

Como  $-a = -1a$ , então  $f(1a) = -1a$