nome: Giovani Zanella

LISTA 1

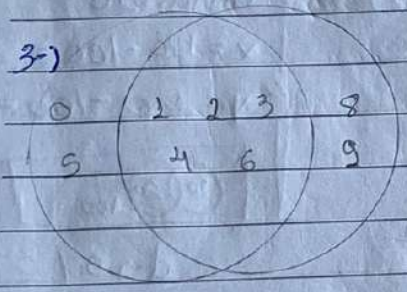
1-)

a-) V
b-) F
c-) F
d-) V
e-) F (pois ∅ ⊂ serve p/ conjuntos)
f-) V
g-) V
h-) V
i-) F
j-) F
k-) V
l-) F

2-)

a-) V
b-) V
c-) V
d-) F
e-) F
f-) F
g-) V
h-) V
i-) V

3-)

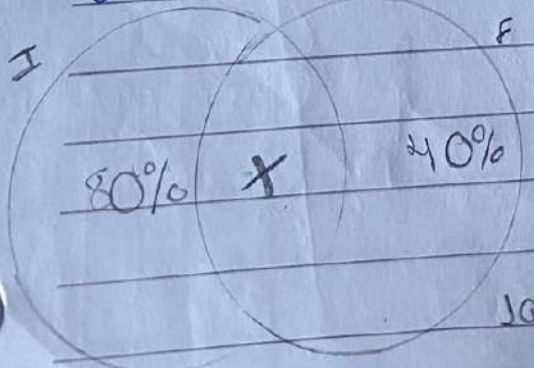


a-) {1 2 3 4 6}
b-) {0, 1, 2, 3, 4, 5, 6, 8, 9}
c-) {0, 9}
d-) {8, 5}

4-)

a-) {1}
b-) {1, 2, 3}
c-) 2
d-) {3, 4}
e-) {2, 4}
f-) {2, 3, 4}
g-) 4
h-) {1, 3, 4}
i-) {1, 2, 4}

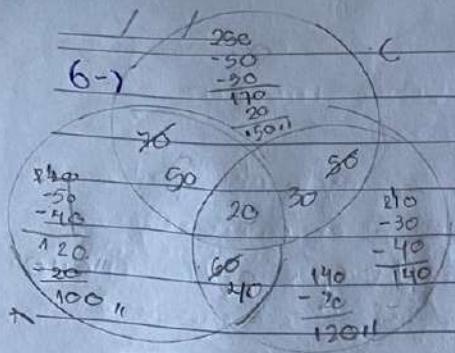
5-)



$$\begin{cases} 100\% - 10\% = 90 \\ // \\ 80 + 40 - x = 90 \\ 120 - x = 90 \\ -x = 90 - 120 \\ -x = -30 \cdot (-1) \\ x = 30 \end{cases}$$

Paula Bianca

6-)



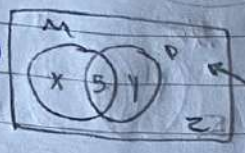
a-) 60

b-) 200

c-) 150 + 120 + 100 = 370

d-) 30 + 50 + 40 = 120

7-)



55- Possui pelo menos 1

$x + 5 + y = 55$

$x + y = 55 - 5 = 50$

$x + y = 50$

• 120 não tem Pai, então o conjunto P cai fora: $x + z = 120 \Rightarrow \boxed{x = 120 - z}$

• 130 não tem M, então o conjunto M cai fora: $y + z = 130 \Rightarrow \boxed{y = 130 - z}$

$\Rightarrow (120 - z) + (130 - z) = 50$

$-2z + 250 = 50$

$-2z = 50 - 250$

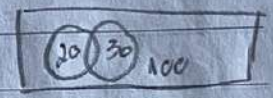
$-2z = -200 \cdot (-1)$

$z = \frac{200}{2} = 100$ //

voltando

$x = 120 - 100 = 20$

$y = 130 - 100 = 30$



8-)

a-) $-\frac{37}{8}$

37 | 8
32 | -4,625 //
050
- 48
020
- 16
40
40
0

b-) 250 | 99
-99 | 0,15 //
590
495
15

c-) $+\frac{13}{6}$

13 | 6
-12 | 2,16
10
6
40
36
4 //

d-) 50 | 37
37 | 0,135
130
111
190
185
-5

9-)

a-) $0,12 = \frac{12}{100} \overset{:4}{=} \frac{3}{25}$

b-) $0,555$

$x = 0,555$ I

$10x = 5,555$ II

II - I

$9x = 5$

$x = \frac{5}{9}$

c-) $0,323232$

$x = 0,323232$

$100 = 32,3232$

II - I

$99x = 32$

$x = \frac{32}{99}$

d-) $6,154234234$

$x = 6,154234234$

$100x = 615,423423$ I

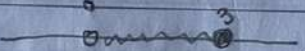
$100\,000x = 615\,423,423..$ II

II - I

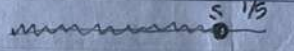
$99900x = 614.808$

$x = \frac{614\,808 \overset{:36}{=} 17078}{99900 \overset{:36}{=} 2775}$

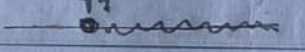
10-

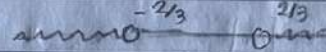
a-) 

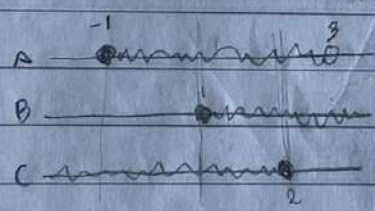
b-) 

c-) 

d-) 

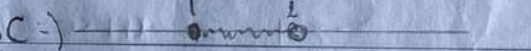
e-) 

f-) 

11-) 

AUB -) 

A∩C -) 

B∪C -) 

A∩B∩C -) 

12-)

a-) $|x| = 4$

$x = 4$ ou $x = -4$

b-) $\left|\frac{x+1}{2x-1}\right|^2 = \frac{3}{2}$

$\left|\frac{x+1}{2x-1}\right| = \frac{3}{2}$ ou $\frac{x+1}{2x-1} = \frac{-3}{2}$

$2(x+1) = 3(2x-1)$

$2x+2 = 6x-3$

$2x-6x = -3-2$

$+4x = +5 \cdot (-1)$

$x = \frac{5}{4}$

$2(x+1) = -3(2x-1)$

$2x+2 = -6x+3$

$2x+6x = 3-2$

$8x = 1$

$x = \frac{1}{8}$

Pauta Branca

/ /

c) $|x| = 2x + 1$

$x = 2x + 1$ ou $x = -(2x+1)$

$x - 2x = 1$ $x = -2x - 1$

$-x = 1 \cdot (-1)$ $x + 2x = -1$

$x = -1$ $3x = -1$

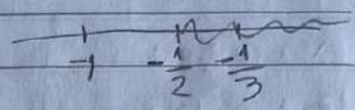
$x = -\frac{1}{3}$ //

condição de existência

$2x + 1 \geq 0$

$2x \geq -1$

$x \geq -\frac{1}{2}$



d) $|3x - 2| = x + 2$

$3x - 2 = x + 2$ ou $3x - 1 = -(x + 2)$

$3x - x = 2 + 1$ $3x - 2 = -x - 2$

$2x = 3$ $3x + x = -2 + 1$

$x = \frac{3}{2}$ $4x = -1$

$x = -\frac{1}{4}$ //

13-)

a) $|x+1| + |x|$

$|x+1| \begin{cases} x+1, & \text{se } x+1 \geq 0 \\ -x-1, & \text{se } x+1 < 0 \end{cases}$ $\begin{cases} x+1, & \text{se } x \geq -1 \\ -x-1, & \text{se } x < -1 \end{cases}$

$|x| \begin{cases} x, & \text{se } x \geq 0 \\ -x, & \text{se } x < 0 \end{cases}$

$\log \begin{cases} -2x - 1, & \text{se } x < -1 \\ -2, & \text{se } -1 \leq x < 0 \\ 2x + 1, & \text{se } x \geq 0 \end{cases}$

$x+1$	$-x-1$	$x+1$	$x+1$
x	$-x$	$-x$	x
soma	$-2x-1$	1	$2x+1$

b-) $|x-2| - |x+1|$

$|x-2| \begin{cases} x-2, & \text{se } x-2 \geq 0 \\ -x+2, & \text{se } x-2 < 0 \end{cases} \quad \begin{cases} x-2, & \text{se } x \geq 2 \\ -x+2, & \text{se } x < 2 \end{cases}$

$|x+1| \begin{cases} x+1, & \text{se } x+1 \geq 0 \\ -x-1, & \text{se } x+1 < 0 \end{cases} \quad \begin{cases} x+1, & \text{se } x \geq -1 \\ -x-1, & \text{se } x < -1 \end{cases}$

-1 2

$x-2$	$-x+2$	$-x+2$	$x-2$
$x+1$	$-x-1$	$x+1$	$x+1$
Soma	$-2x+1$	3	$2x-1$

logo $\begin{cases} -2x+1, & \text{se } x < -1 \\ 3, & \text{se } -1 \leq x < 2 \\ 2x-1, & \text{se } x \geq 2 \end{cases}$

c-) $|2x-1| + |x-2|$

$|2x-1| \begin{cases} 2x-1, & \text{se } 2x-1 \geq 0 \\ -2x+1, & \text{se } 2x-1 < 0 \end{cases} \quad \begin{cases} 2x-1, & \text{se } x \geq 1/2 \\ -2x+1, & \text{se } x < 1/2 \end{cases}$

$|x-2| \begin{cases} x-2, & \text{se } x-2 \geq 0 \\ -x+2, & \text{se } x-2 < 0 \end{cases} \quad \begin{cases} x-2, & \text{se } x \geq 2 \\ -x+2, & \text{se } x < 2 \end{cases}$

c/b 2

$2x-1$	$-2x+1$	$2x-1$	$2x-1$
$x-2$	$-x+2$	$-x+2$	$x-2$
Soma	$-3x+3$	$x+1$	$3x-3$

logo $\begin{cases} -3x+3, & \text{se } x < \frac{1}{2} \\ x+1, & \text{se } \frac{1}{2} \leq x < 2 \\ 3x-3, & \text{se } x \geq 2 \end{cases}$

Paula Duran

1 1

1M-1)

a) $|x-3| \leq 5$ $\quad x-3 \leq 5$ $\quad x-3 \geq -5$

$-5 \leq x-3 \leq 5$ $\quad x \leq 5+3$ $\quad x \geq -5+3$

$\{-2 \leq x \leq 8\}$ $\quad x \leq 8$ $\quad x \geq -2$

b) $|x+4| > 1$ $\quad x+4 > 1$ $\quad$ sau $\quad x+4 < -1$

$x >$ sau $x <$ $\quad x > -1+1$ $\quad x < -1-4$

$\{x > -3$ sau $x < 5\}$ $\quad x > -3$ $\quad x < 5$

c) $|2x-1| < x$ $\quad 2x-1 < x$ $\quad 2x-1 > -x$

$-x < x-3 < x$ $\quad 2x-x < 1$ $\quad 2x+x > 1$

$x < 1$ $\quad 3x > 1$

$x > 1/3$

d) $|x+1| \leq -|2x-1|$

$x+1 < 2x-1$ $\quad x+1 \leq -2x+1$

$x-2x < -1-1$ $\quad x+2x \leq 1-1$

$-x < -2 \cdot (-1)$ $\quad 3x \leq 0$

$x > 2$

e) $|x-1| - |x+2| > x$

$(x-1)-(x+2) > x$ $\quad$ sau $\quad (x-1)-(x+2) < -x$

f) $|x-2|+|x-1|>1$

$x-2+x-1>1$ ou $x-2+x-1<-1$

$2x-3>1$ $2x-3<-1$

$2x>4$ $2x<2$

$x>\frac{4}{2}$ $x<\frac{2}{2}$

$x>2$ $x<1$

5) $\sqrt{xy} \leq \frac{x+y}{2} \Leftrightarrow (\sqrt{xy})^2 \leq \left(\frac{x+y}{2}\right)^2$

$\Leftrightarrow xy \leq \frac{(x+y)^2}{2^2}$

$\Leftrightarrow xy \leq \frac{x^2+2xy+y^2}{4}$

$\Leftrightarrow 4xy \leq x^2+2xy+y^2$

$\Leftrightarrow 0 \leq x^2+2xy+y^2-4xy$

$\Leftrightarrow 0 \leq x^2-2xy+y^2$

$\Leftrightarrow 0 \leq (x-y)^2$

Como a ultima expressão é verdadeira, ou seja é elevado ao quadrado, e qualquer numero elevado é maior que Zero