data

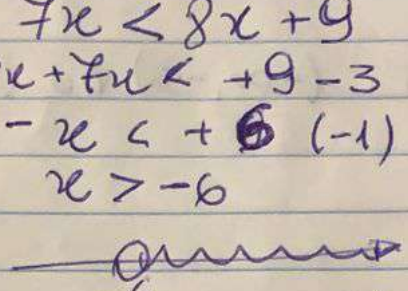
Guilherme Amorilho - 2° Semestre 20

① a) $3 + 7x < 8x + 9$

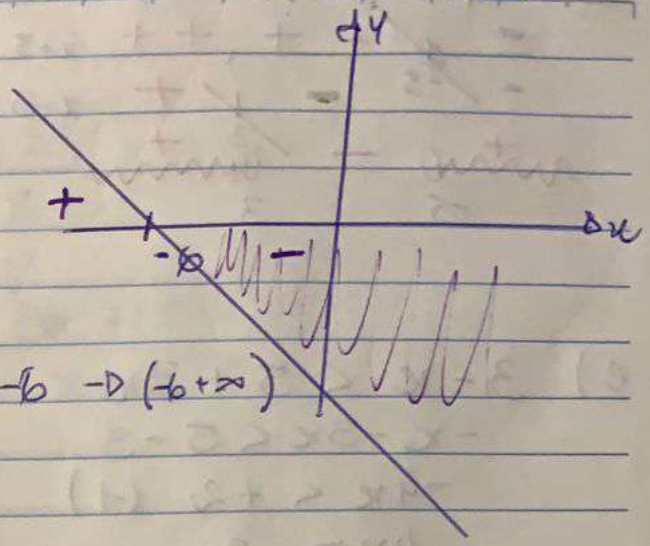
$-8x + 7x < +9 - 3$

$-x < +6 \ (-1)$

$x > -6$



$x > -6 \rightarrow (-6, +\infty)$



b) $7 < 5x + 3 \leq 9$

$7 < 5x + 3$

$-5x < 3 - 7$

$-5x < -4 \ (-1)$

$5x > 4$

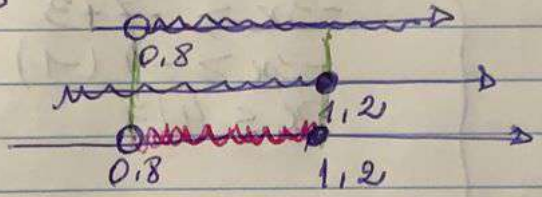
$x > \frac{4}{5}$

$5x + 3 \leq 9$

$5x \leq 9 - 3$

$5x \leq 6$

$x \leq \frac{6}{5}$



$0,8 < x \leq 1,2$

$]0,8 ; 1,2]$

c) $\frac{x}{x+7} < 5 \rightarrow \frac{x}{x+7} - \frac{5}{1} < 0$

$\frac{x - 5(x+7)}{x+7} < 0 \rightarrow \frac{x - 5x - 35}{x+7} < 0$

$\frac{-4x - 35}{x+7} < 0$ (I / II) negativo

I) $-4x - 35 = 0$

$-4x = 35$

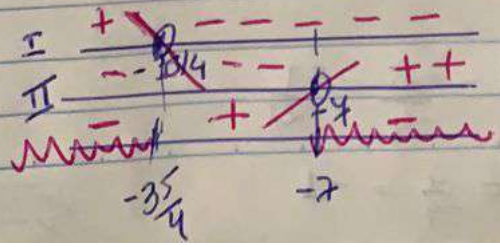
$x = 35/4$

$x = -35/4$

II) $x \neq 7$

$x + 7 = 0$

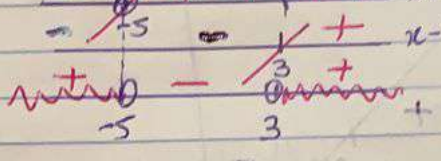
$x = -7$



$(-\infty, -\frac{35}{4})$ ou $(-7, +\infty)$

Positivos

d) $(x+5)(x-3) > 0$



$(-\infty, -5) \cup (3, +\infty)$

e) $3 - x < 5 + 3x$

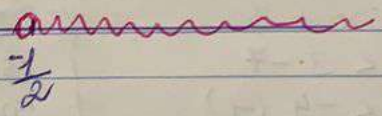
$-x - 3x < 5 - 3$

$-4x < +2 \quad (-1)$

$4x > -2$

$x > -1/2$

$\{x \in \mathbb{R} / x > -1/2\} \cup (-\frac{1}{2}, +\infty)$



f) $2 > -3 - 3x \geq -7$

$2 > 3 - 3x$

$3x > -3 - 2$

$3x > -5$

$3x > 5$

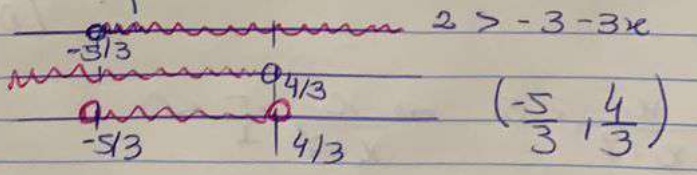
$x > 5/3$

$-3 - 3x \geq -7$

$-3x \geq -7 + 3$

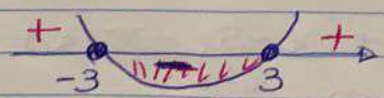
$-3x \geq -4 \quad (-1)$

$x \leq 4/3$



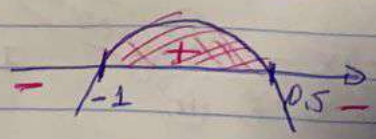
$(\frac{-5}{3}, \frac{4}{3})$

g) $x^2 \leq 9$



$[-3, 3]$

h) $1 - x - 2x^2 \geq 0$ → Positivo



$-2x^2 - x + 1 = 0$

$x = \frac{1 \pm \sqrt{1^2 + 4(-2)1)}}{2(-2}$

$x = \frac{1 \pm \sqrt{9}}{2} \rightarrow x = \frac{1 \mp 3}{-4}$

$x' = \frac{-2}{-4} = +\frac{1}{2}$

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

data

i) $\frac{x}{x-3} < 4$

$\frac{x}{x-3} - \frac{4}{1} < 0 \Rightarrow \frac{x-4(x-3)}{x-3} < 0$

$\frac{x-4x+12}{x-3} < 0 \Rightarrow \frac{-3x+12}{x-3} < 0$ negativo

$-3x+12$: $+ \; + \; 4 \; - \; -$

$x-3$: $- \; - \; 3 \; + \; + \; + \; +$

$x \neq 3$: $- \; \nexists \; + \; \bullet \; -$

$3 \quad 4$

$(-\infty, 3) \cup (4, +\infty)$