Fundamentos de Matemática 28/03/2024

EXERCÍCIOS de Limites Indeterminados

Para regime especial de frequência.

↳ Livro: Cálculo A - Pág. 79

① Seja $f(x) = \begin{cases} x-1, & x \leq 3 \\ 3x-7, & x > 3. \end{cases}$

ⓐ $\lim_{x \to 3^-} f(x) = 3 - 1 = \boxed{2}$

ⓑ $\lim_{x \to 3^+} f(x) = 3 \cdot 3 - 7 = 9 - 7 = \boxed{2}$

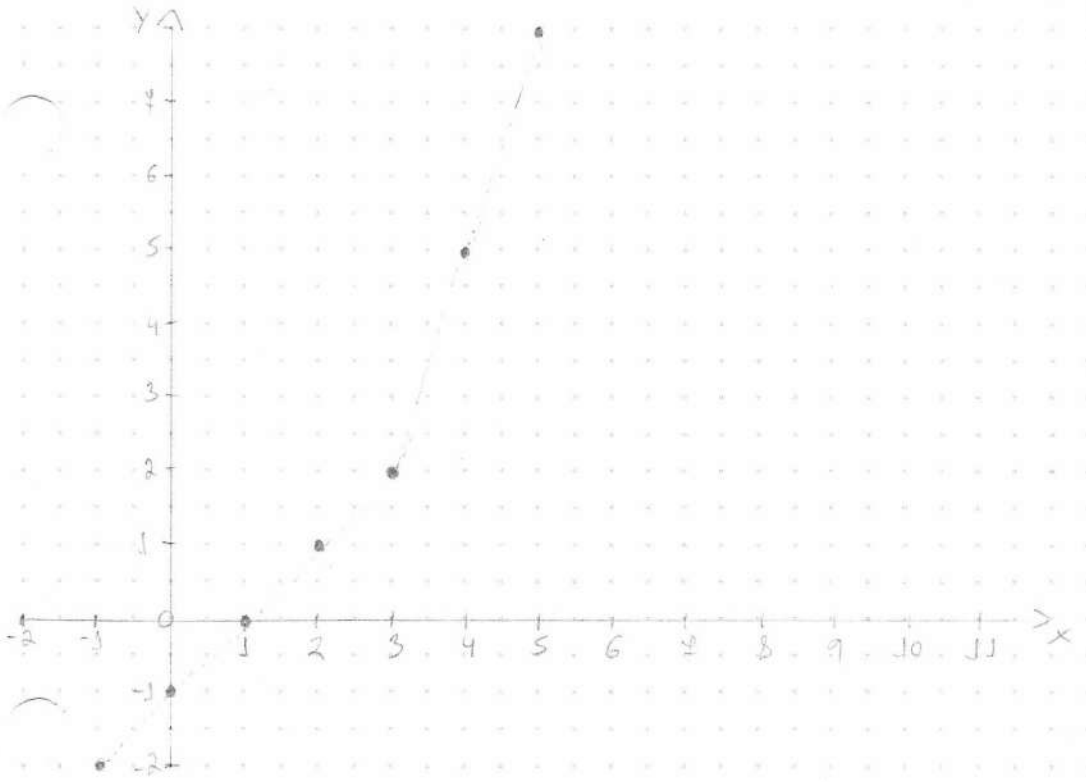
ⓒ $\lim_{x \to 3} f(x) = \boxed{2}$

ⓓ $\lim_{x \to 5^-} f(x) = 3 \cdot 5 - 7 = 15 - 7 = \boxed{8}$

ⓔ $\lim_{x \to 5^+} f(x) = 3 \cdot 5 - 7 = 15 - 7 = \boxed{8}$

ⓕ $\lim_{x \to 5} f(x) = \boxed{8}$

X	Y
4	12-7=5



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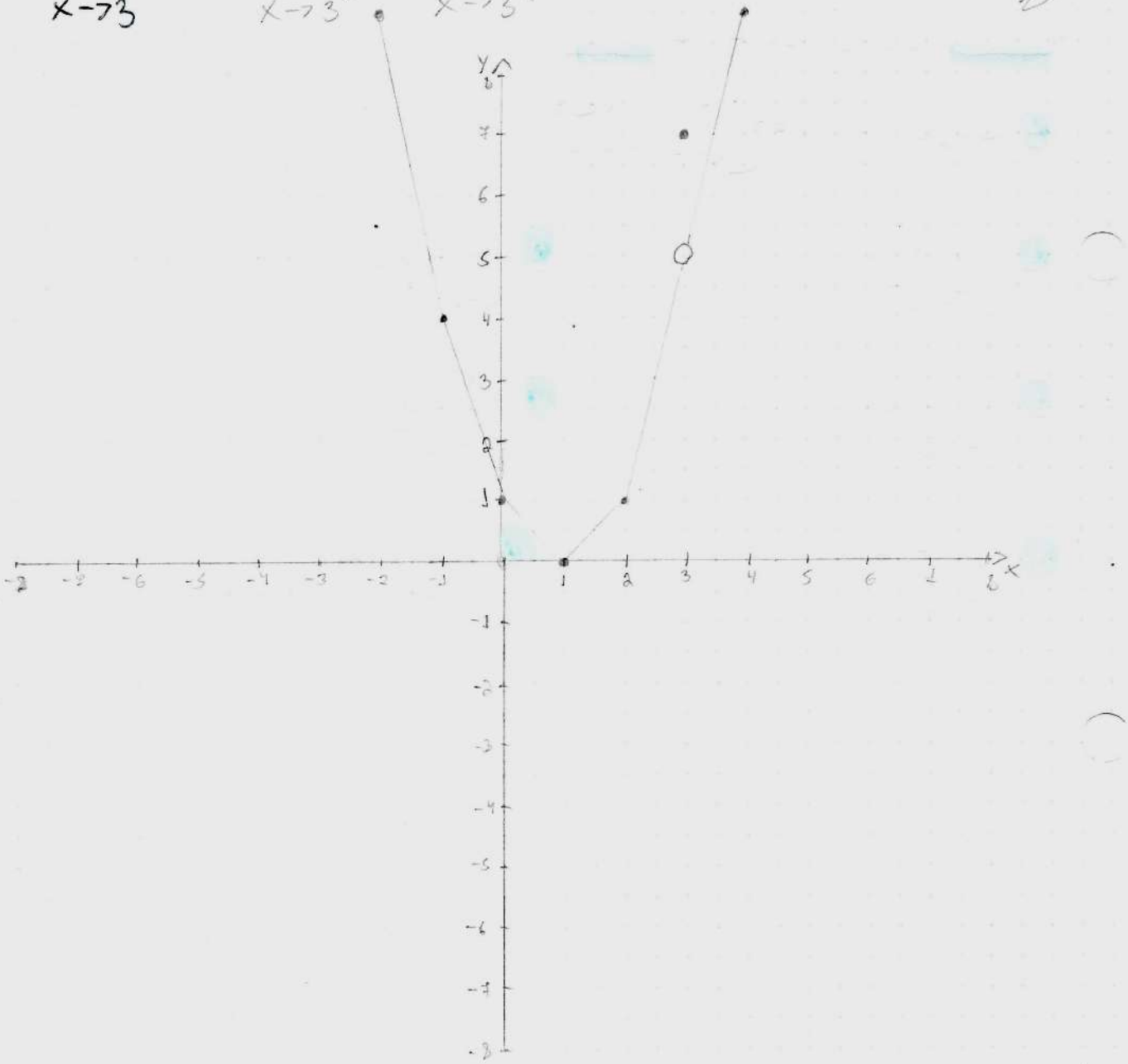
② Seja $h(x)\begin{cases} x^2-2x+1, & x \neq 3 \\ 7, & x=3. \end{cases}$

$\lim_{x\to 3} h(x) = \lim_{x\to 3^-} h(x) = \lim_{x\to 3^+} h(x) = 3^2-2\cdot 3+1 = 9-6+1 = \boxed{4}$



$f(2) = 2^2-2\cdot 2+1 = 4-4+1 = 1$

$f(0) = 0^2-2\cdot 0+1 = 1$

$f(4) = 4^2-2\cdot 4+1 = 16-8+1 = 9$

$f(-1) = -1^2-2\cdot -1+1 = 1-(-2)+1 = 4$

$f(1) = 1-2+1 = 0$

$f(-2) = -2^2-2\cdot -2+1 = 4-(-4)+1 = 9$

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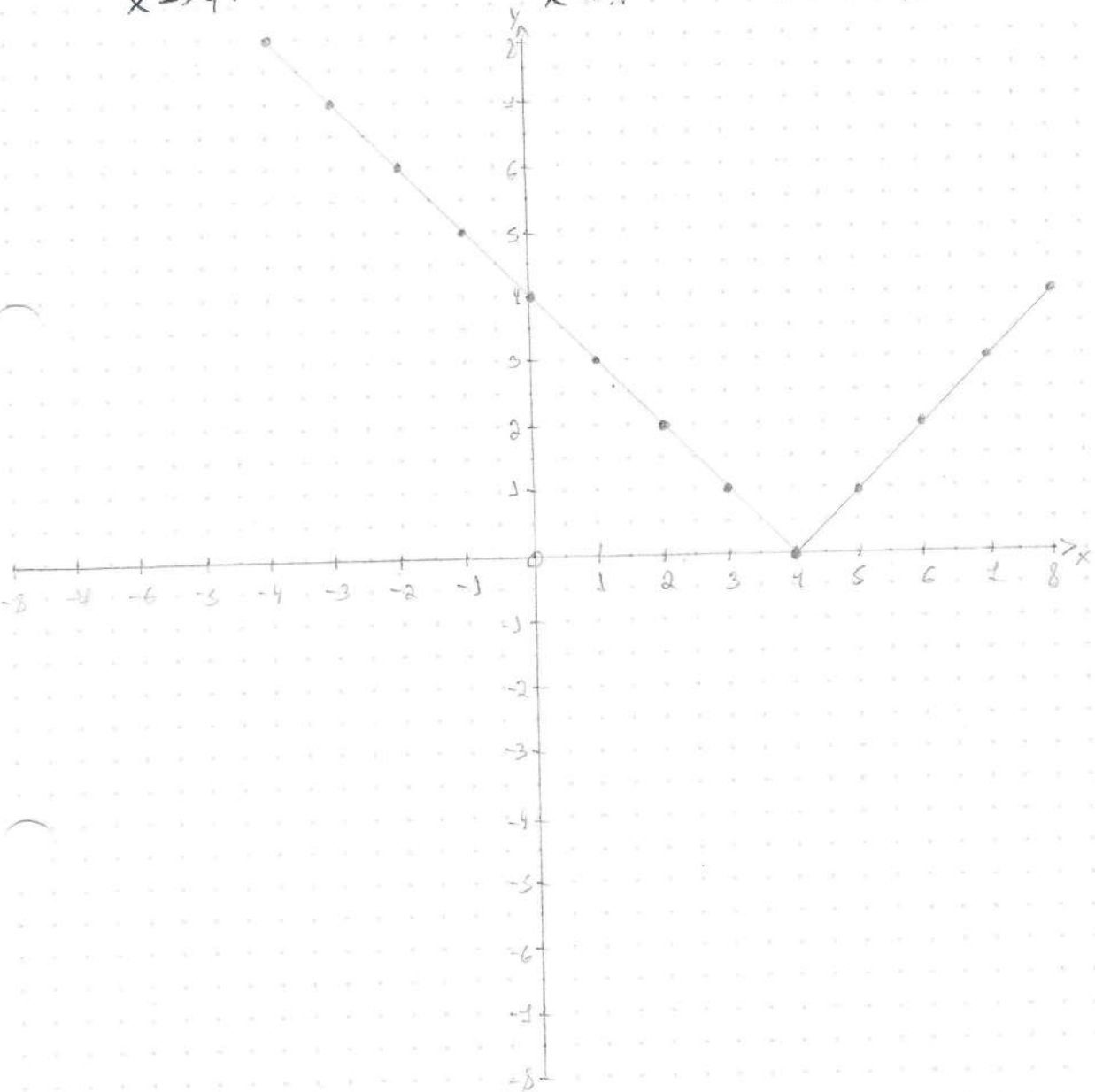
③ Seja $F(x) = |x-4|$

ⓐ $\lim_{x \to 4^+} F(x) = |4-4| = 0$, ⓑ $\lim_{x \to 4^-} F(x) = |4-4| = 0$, ⓒ $\lim_{x \to 4} f(x) = 0$



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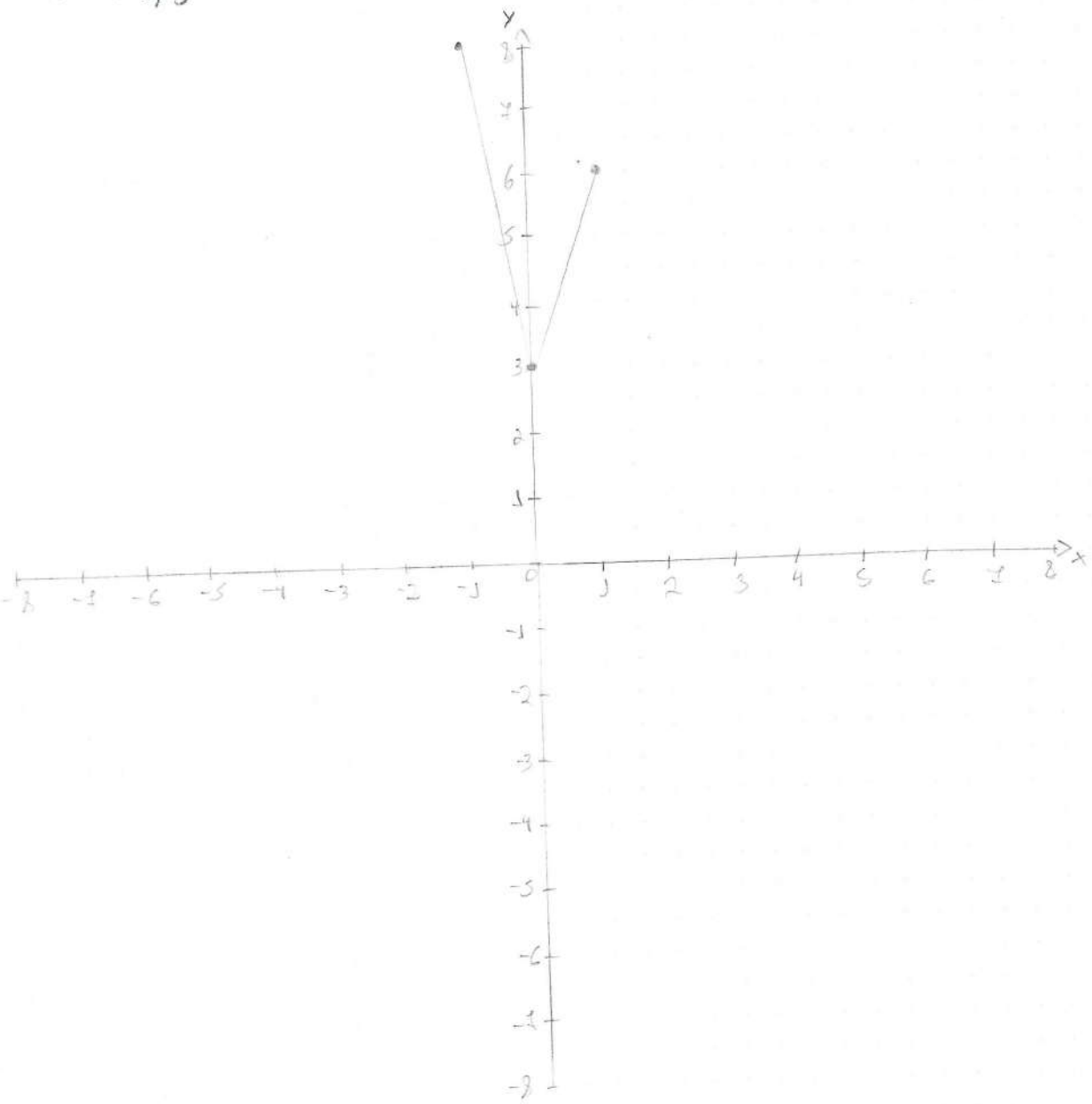
④ Seja $f(x) = 2 + |5x - 1|$ quando $x \to 1/5$

a) $\lim_{x \to 1/5^+} f(x) = 2 + |5 \cdot \frac{1}{5} - 1| = 2 + |1 - 1| = \boxed{2}$

b) $\lim_{x \to 1/5^-} f(x) = 2 + |5 \cdot \frac{1}{5} - 1| = 2 + |1 - 1| = \boxed{2}$

c) $\lim_{x \to 1/5} f(x) = \boxed{2}$



$f(1) = 2 + |5 - 1| = 2 + 4 = 6$ $f(-1) = 2 + |5 \cdot -1 - 1| = 2 + |-5 - 1| = 2 + 6 = 8$

$f(0) = 2 + |0 - 1| = 3$

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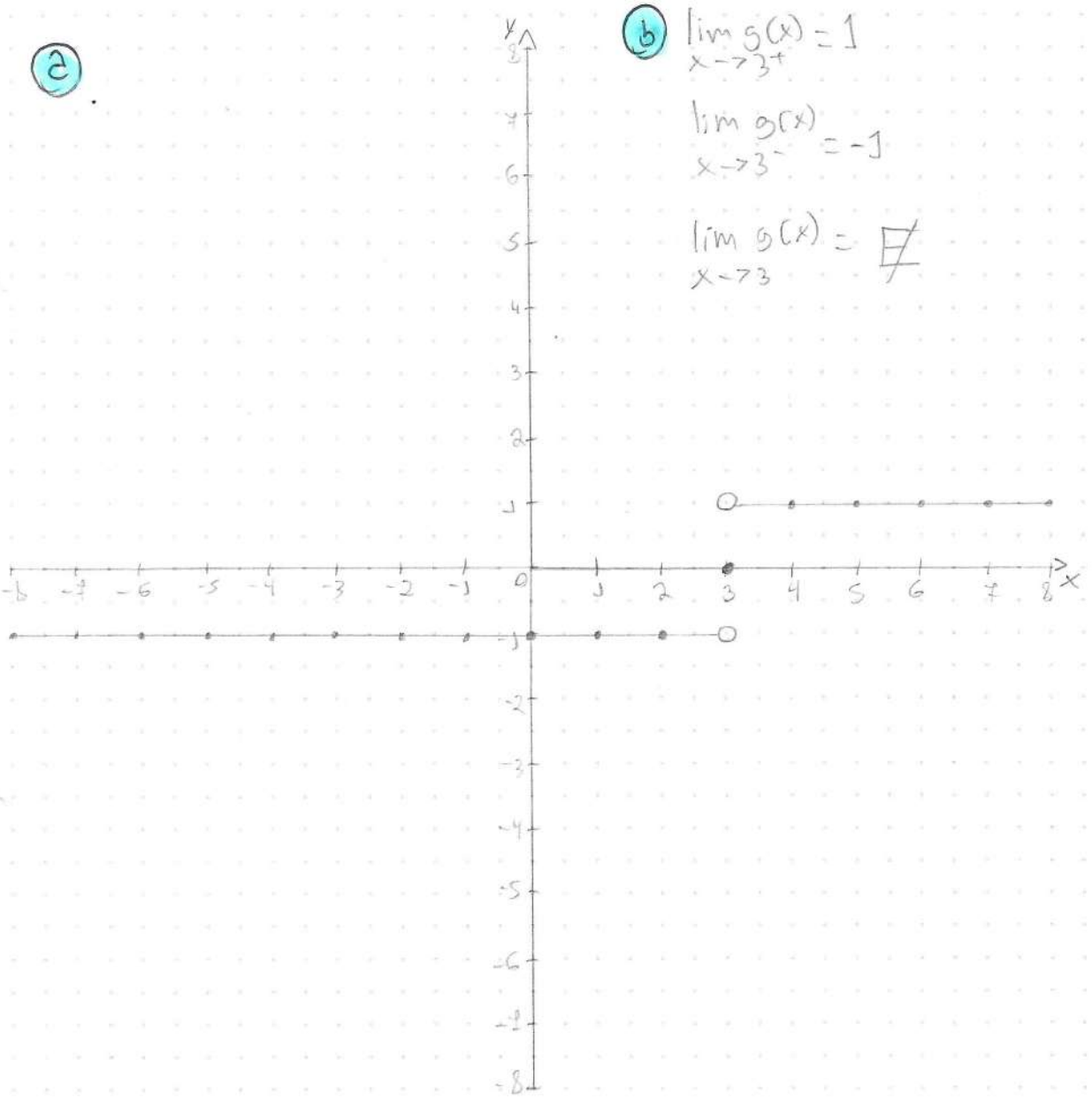
⑤ Seja $g(x) = \begin{cases} \frac{|x-3|}{x-3}, & x \neq 3 \\ 0, & x = 3 \end{cases}$

a)



b) $\lim_{x \to 3^+} g(x) = 1$

$\lim_{x \to 3^-} g(x) = -1$

$\lim_{x \to 3} g(x) = \nexists$

$f(2) = \frac{|2-3|}{2-3} = \frac{1}{-1} = \frac{-1}{1} = -1$

$f(4) = \frac{1}{1} = 1$

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

$f(5) = \frac{2}{2} = 1$

$f(0) \frac{3}{-3} = -1$