Lista 4

① $\lim_{x \to 0} 2x+5$

$2 \times 0 + 5 = 5$

Y tende a 5

$\lim_{x \to 1} -3x + \frac{1}{3}$

$-3 \times 1 + \frac{1}{3}$

$-\frac{9}{3} + \frac{1}{3} = -\frac{8}{3}$

$\lim_{x \to 2} -\frac{x}{2} - \frac{2}{3}$

$-\frac{2}{2} - \frac{2}{3}$

$\frac{-6-4}{6} = -\frac{10}{6}$

$\lim_{x \to 1} -\frac{x}{2} - \frac{1}{3}$

$-\frac{1}{2} - \frac{1}{3}$

$\frac{-3-2}{6} = -\frac{5}{6}$

$\lim_{x \to 1} 2x^2 - 5x + 6$

$2 \times 1^2 - 5 \times 1 + 6$

$2 - 5 + 6 = 3$

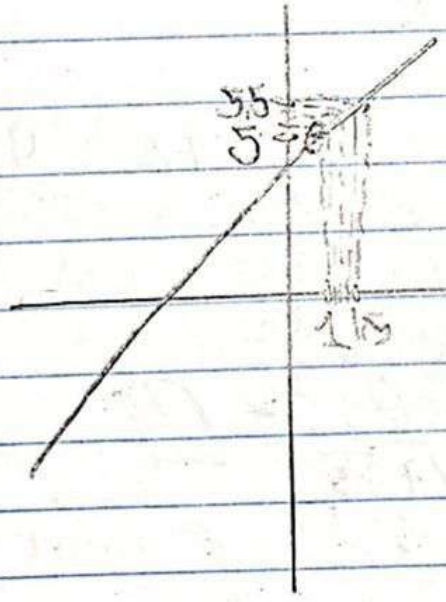
$\lim_{x \to 1} x^3 - 1$

$1^3 - 1 = 0$

② $\lim_{x \to 1} x + 4 = 5$

X	0,5	0,7	0,9	0,95	0,99
Y	4,5	4,7	8,9	4,95	4,99

X	1,5	1,2	1,1	1,05	1,01
Y	5,5	5,2	5,1	5,05	5,01



③ a) $\lim_{x \to 1} g(x) = 2$

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

c) $\lim_{x \to 3^+} g(x) = 4$

d) $\lim_{x \to 3} g(x) = \nexists$ pois $\lim_{x \to 3^+} g(x) \neq \lim_{x \to 3^-} g(x)$

e) $g(3) = 3$

(4) a) $\lim_{x \to 2^-} f(x) = 3$ b) $\lim_{x \to 2^+} f(x) = 1$ c) $\lim_{x=2} f(x) = \nexists$, pois $\lim_{x \to 2^-} f(x) \neq \lim_{x \to 2^+} f(x)$

d) $f(2) = \nexists$, pois $f(2)$ não possui valor definido

e) $\lim_{x \to 4} f(x) = 4$ β) $f(4) = \nexists$, pois não há valor definido para $f(4)$

(5) a) $\lim_{x \to -2} \frac{4 - x^2}{2 + x} \rightarrow \frac{(2-x)(2+x)}{(2+x)} = 2 - x \rightarrow 2 - (-2) = \boxed{4}$

b) $\frac{x^2 - 4x + 3}{x^2 - x - 6} = \frac{(x-3)(x-1)}{(x-3)(x+2)} = \frac{x-1}{x+2} = \frac{3-1}{3+2} = \boxed{\frac{2}{5}}$

$x \to 3$

c) $\frac{x^3 - 1}{5x - 5} = \frac{(x-1)(x^2+x+1)}{5(x-1)} = \frac{x^2+x+1}{5} = \frac{1^2+1+1}{5} = \boxed{\frac{3}{5}}$

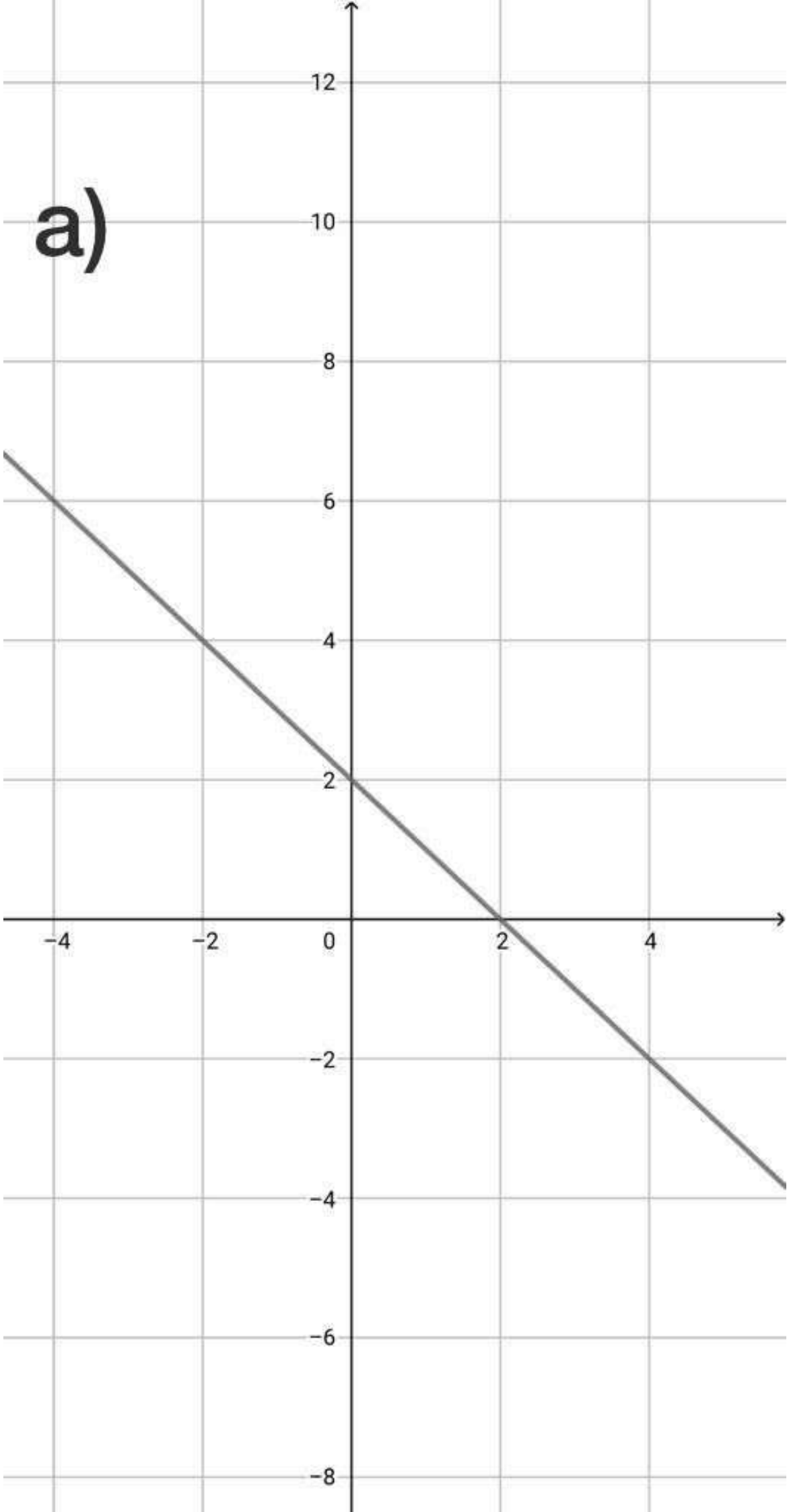
$x \to 1$

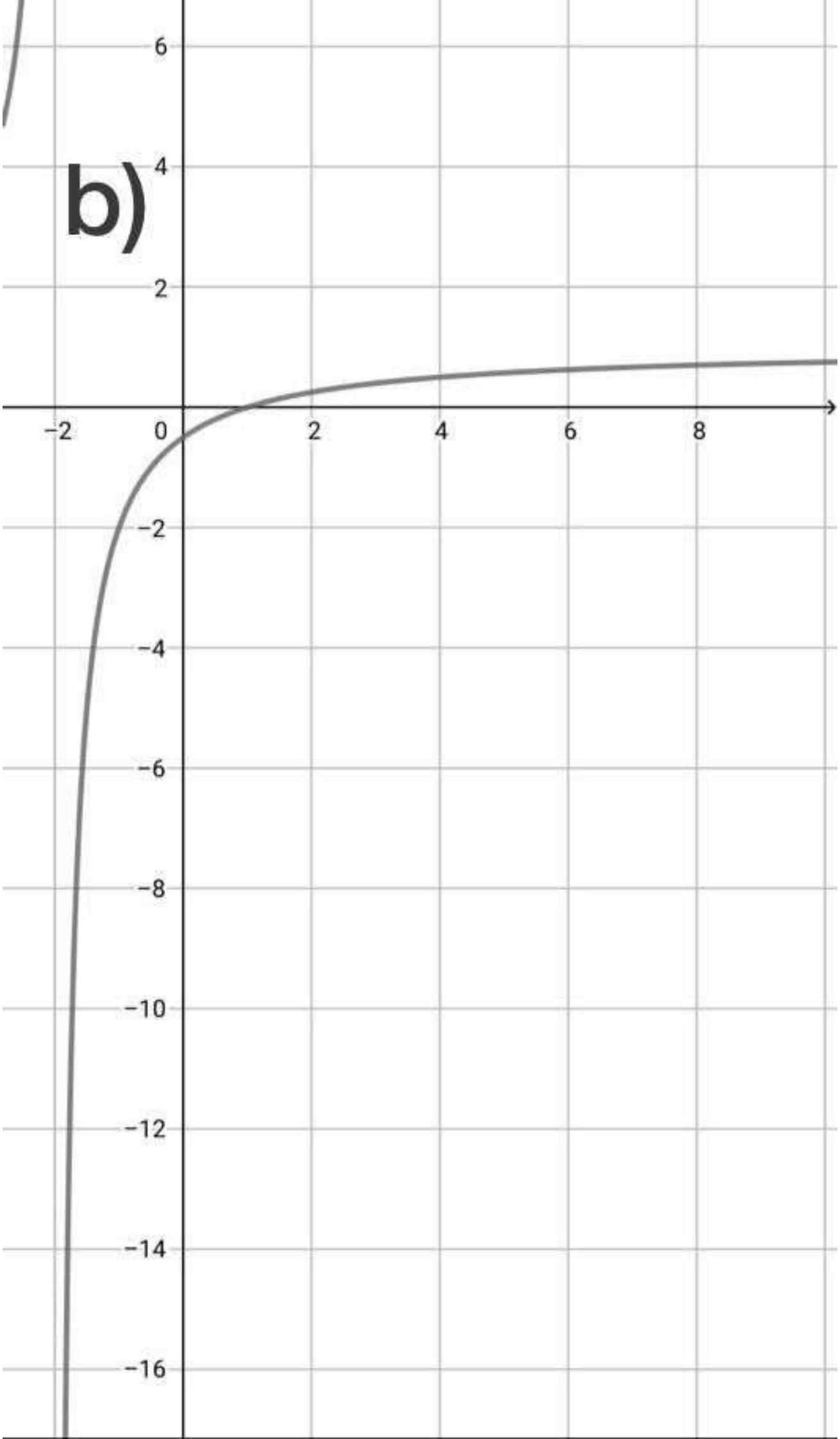
d) $\frac{8 + x^3}{4 - x^2}$ $\frac{(2+x)(x^2-2x+2^2)}{(2-x)(2+x)}$ $\frac{x^2-2x+2^2}{2-x}$ $\frac{4+4+4}{2+2} = \frac{12}{4} = \boxed{3}$

$x \to -2$

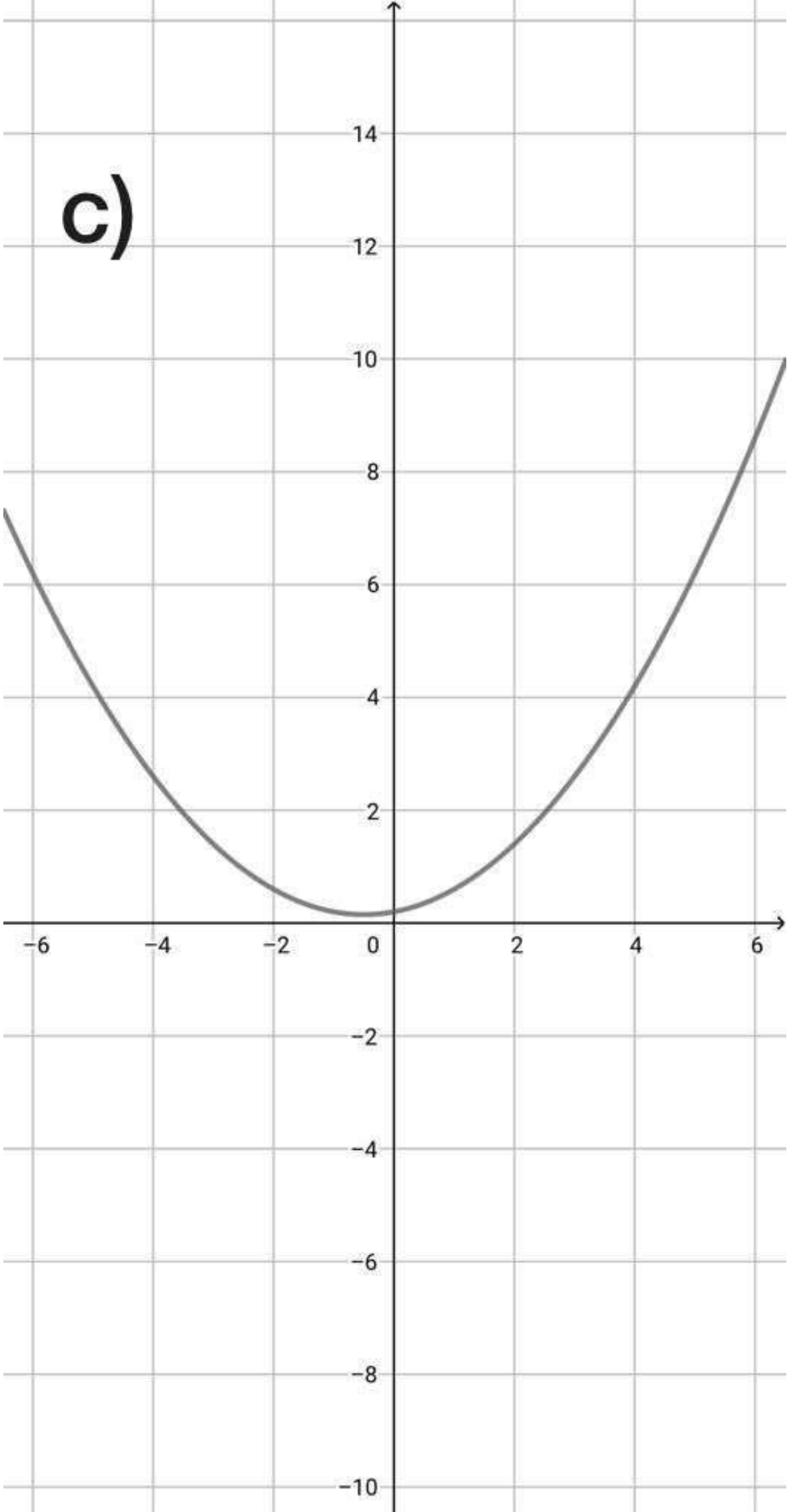
e) $\frac{1 - x^2}{x + \sqrt{2+x}}$ $\frac{1-1^2}{1+\sqrt{2+1^2}}$ $\frac{0}{1+\sqrt{3}} = \boxed{0}$

a)

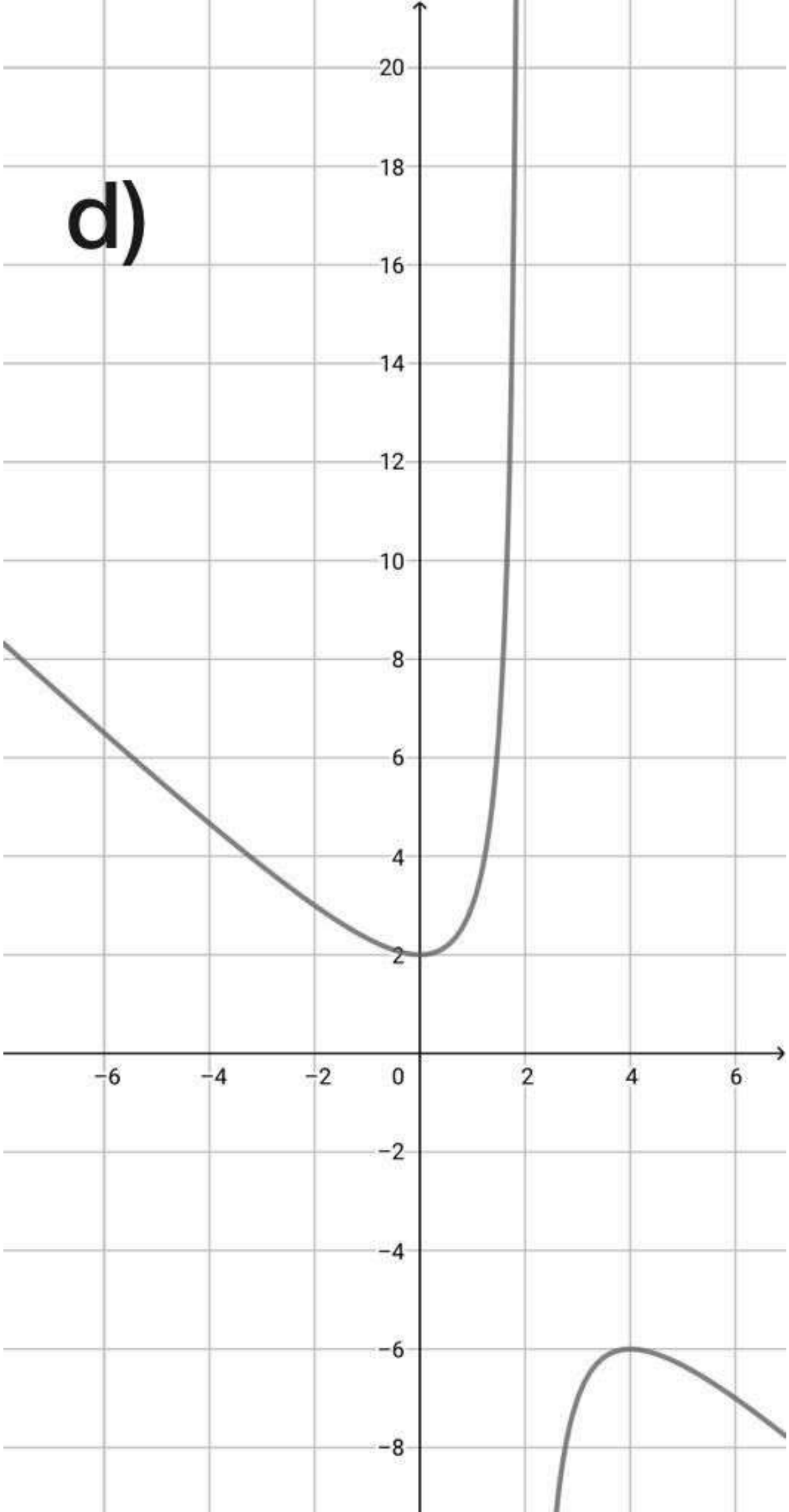



b)
6
4
2
−2
0
2
4
6
8
−2
−4
−6
−8
−10
−12
−14
−16

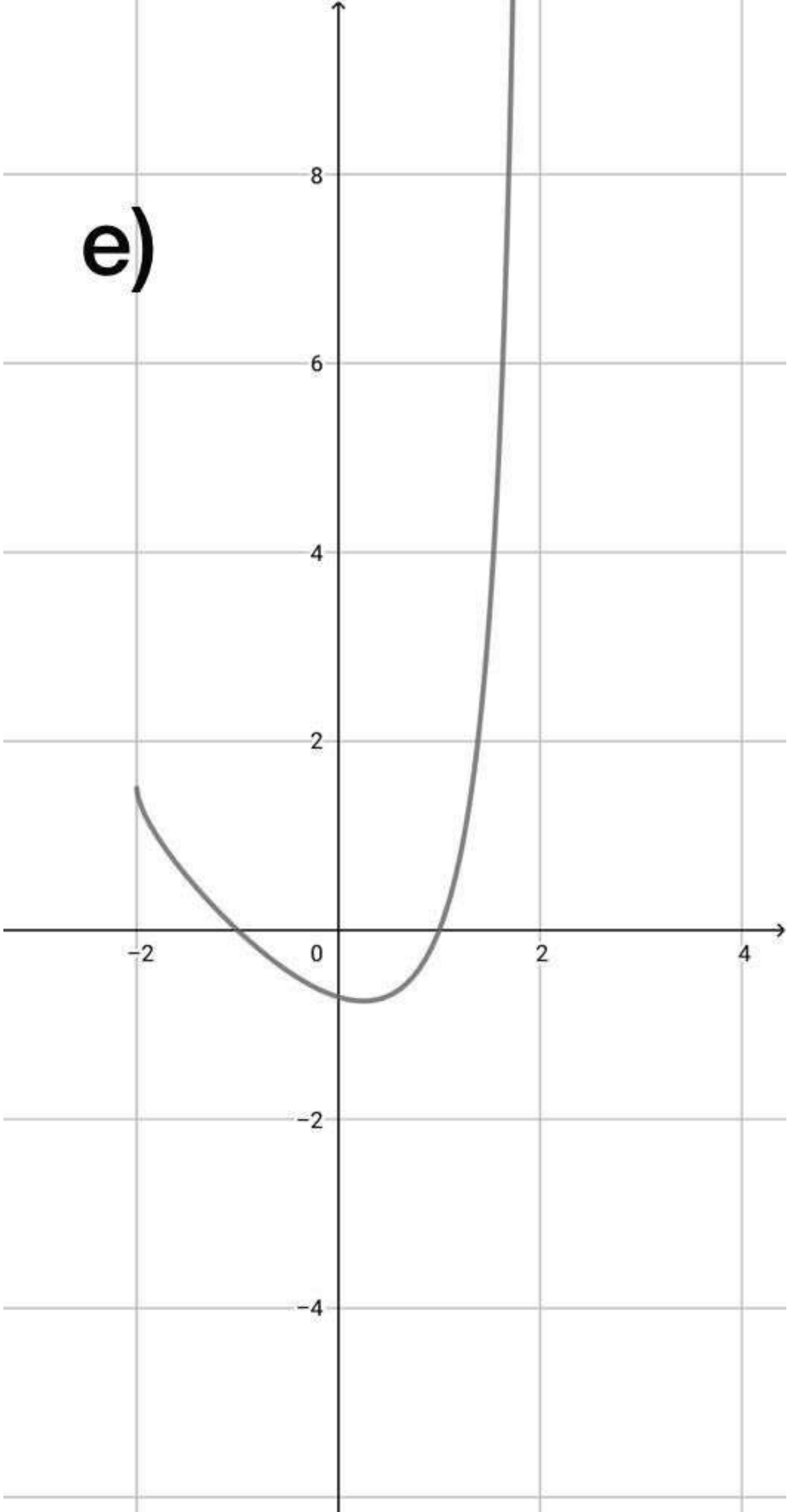
c)



d)



e)



(6) a) a) $\lim_{x \to 1^+} 3x - 2$

$3 \times 1 - 2$

1

b) $\lim_{x \to 1^-} 4x + 1$

$4 \times 1 + 1$

5

c) $\nexists$ pois $\lim_{x \to 1^-} f(x) \neq \lim_{x \to 1^+} f(x)$

b) a) $\lim_{x \to -1^+} 3 - 2x$

$3 - 2 \times (-1)$

$3 + 2$

5

b) $\lim_{x \to -1^-} 4 - x$

$4 - (-1)$

5

$\lim_{x \to -1} f(x)$

5

c) a) $\lim_{x \to 3^+} 2x - 5$

$2 \times 3 - 5$

1

b) $\lim_{x \to 3^-} 4 - 5x$

$4 - 5 \times 3$

-11

c) $\nexists$, pois $\lim_{x \to 3^+} f(x) \neq \lim_{x \to 3^-} f(x)$

d) a) $\lim_{x \to 2^+} x - 1$

$2 - 1$

1

b) $\lim_{x \to 2^-} 1 - x^2$

$1 - 2^2$

-3

c) $\nexists$, pois $\lim_{x \to 2^+} f(x) \neq \lim_{x \to 2^-} f(x)$

e) a) $\lim_{x \to 3^+} 8 - 2x$

$8 - 2 \cdot 3$

2

b) $\lim_{x \to 3^-} x^2 - 3x + 2$

$3^2 - 3 \times 3 + 2$

$9 - 9 + 2$

2

c) $\lim_{x \to 3} f(x) = 2$

(7) a) $\lim_{x \to 0^+} g(x)$ (x > 0)

$1 - x^2$

$1 - 0^2$

1

x	0,1	0,2	0,5	0,7	0,99
y	0,99	0,96	0,75	0,51	0,01

b) $\lim_{x \to 0^-} g(x)$

2^x

2^0

1

x	-0,1	-0,2	-0,5	-0,7	-0,9
y	0,93	0,87	0,7	0,61	0,53

c) $\lim_{x \to 2^+} g(x)$

$2x - 6$

$2 \cdot 2 - 6$

-2

x	2,01	2,2	2,5	2,7	2,99
y	-1,98	-1,6	-1,5	-0,6	-0,02

d) $\lim_{x \to 2^-} g(x)$

$1 - x^2$

-3

x	1,99	1,8	1,5	1,2	1,01
y	-2,96	-2,24	-1,25	-0,44	-0,02