

LCE0130- Cálculo Diferencial e Integral

Lista de Exercícios (Limites)

1) Usando a grade de valores de x (noção intuitiva de limite), calcule os seguintes limites

a. $\lim_{x \rightarrow 0} 2x + 5 = 5$

d. $\lim_{x \rightarrow 1} -\frac{x}{2} - \frac{1}{3} = -0,83$

b. $\lim_{x \rightarrow 1} -3x + \frac{1}{3} = -2,67$

e. $\lim_{x \rightarrow 1} 2x^2 - 5x + 6 = 3$

c. $\lim_{x \rightarrow 2} -\frac{x}{2} - \frac{2}{3} = -1,67$

f. $\lim_{x \rightarrow 1} x^3 - 1 = 0$

2) Para as funções que se seguem verifique se os limites, quando $x \rightarrow a$, existem, ou seja, $\lim_{x \rightarrow a^+} f(x) = \lim_{x \rightarrow a^-} f(x)$. Faça um esboço do gráfico das funções (está no final do arquivo).

a) $f(x) = \frac{4-x^2}{2+x}$; $a = -2$

R: $L=4$

b) $f(x) = \frac{x^2-4x+3}{x^2-x-6}$; $a = 3$

R: $L=2/5$

c) $f(x) = \frac{x^3-1}{5x-5}$; $a = 1$

R: $L=3/5$

d) $f(x) = \frac{8+x^3}{4-x^2}$; $a = -2$

R: $L=3$

e) $f(x) = \frac{x^4-16}{8-x^3}$; $a = 2$

R: $L= -8/3$

f) $f(x) = \frac{\sqrt{x}-1}{x-1}$; $a = 1$

R: $L=1/2$

g) $f(x) = \frac{1-x^2}{x+\sqrt{2+x}}$; $a = 1$

R: $L=0$

h) $f(x) = \frac{2-\sqrt{x-3}}{x^2-49}$; $a = 7$

R: $L= -1/56$

$$i) f(x) = \frac{3-\sqrt{5+x}}{1-\sqrt{5-x}}; a = 4$$

$$R: L = -1/3$$

$$j) f(x) = \begin{cases} 4 - x^2 & \text{se } x < 1 \\ 5 - 2x & \text{se } x \geq 1 \end{cases}; a = 1$$

$$R: L = 3$$

$$k) f(x) = \begin{cases} x^2 & \text{se } x \neq 2 \\ 3 & \text{se } x = 2 \end{cases}; a = 2$$

$$R: L = 4$$

3) Para função que se segue,

$$f(x) = \begin{cases} 2^x & x < 0 \\ 1 - x^2 & 0 \leq x < 2 \\ 2x - 6 & x \geq 2 \end{cases}$$

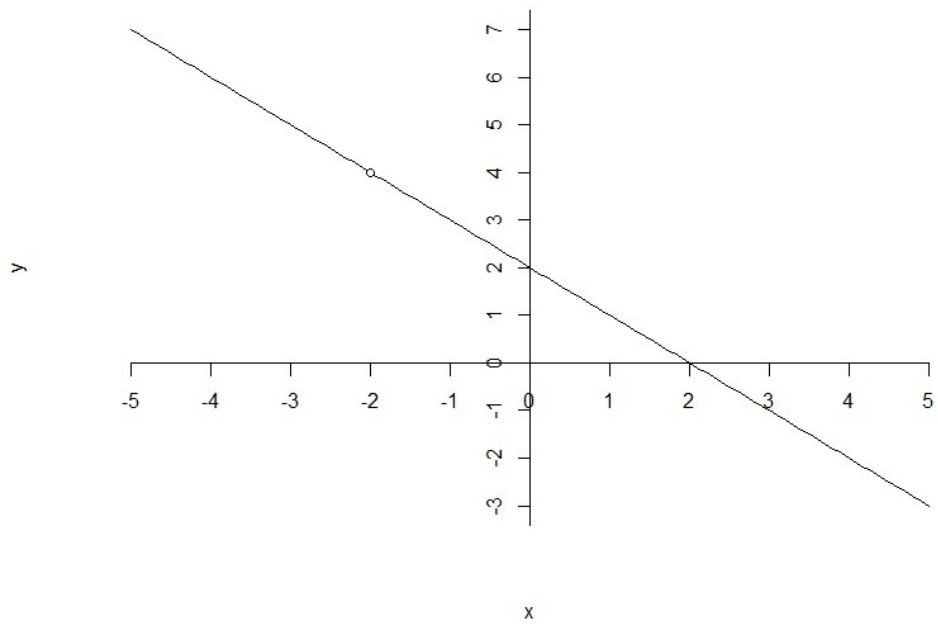
Calcule os limites

- a. $\lim_{x \rightarrow 0^+} f(x) = 1$
- b. $\lim_{x \rightarrow 0^-} f(x) = 1$
- c. $\lim_{x \rightarrow 2^+} f(x) = -2$
- d. $\lim_{x \rightarrow 2^-} f(x) = -3$

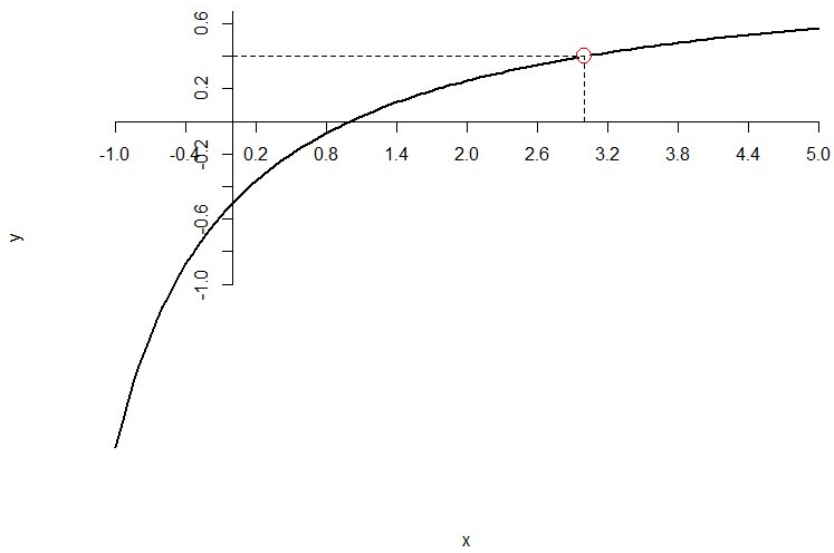
Faça um esboço do gráfico da função. (gráfico no final)

Gráficos

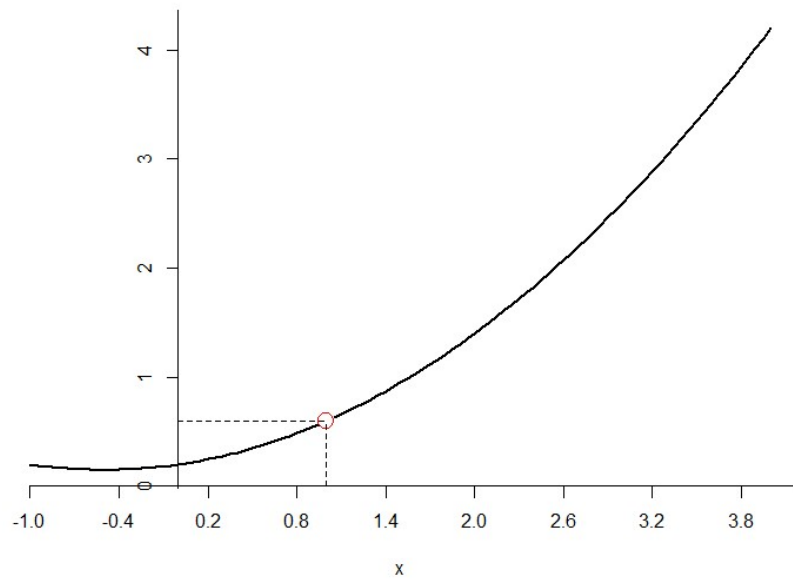
2a)



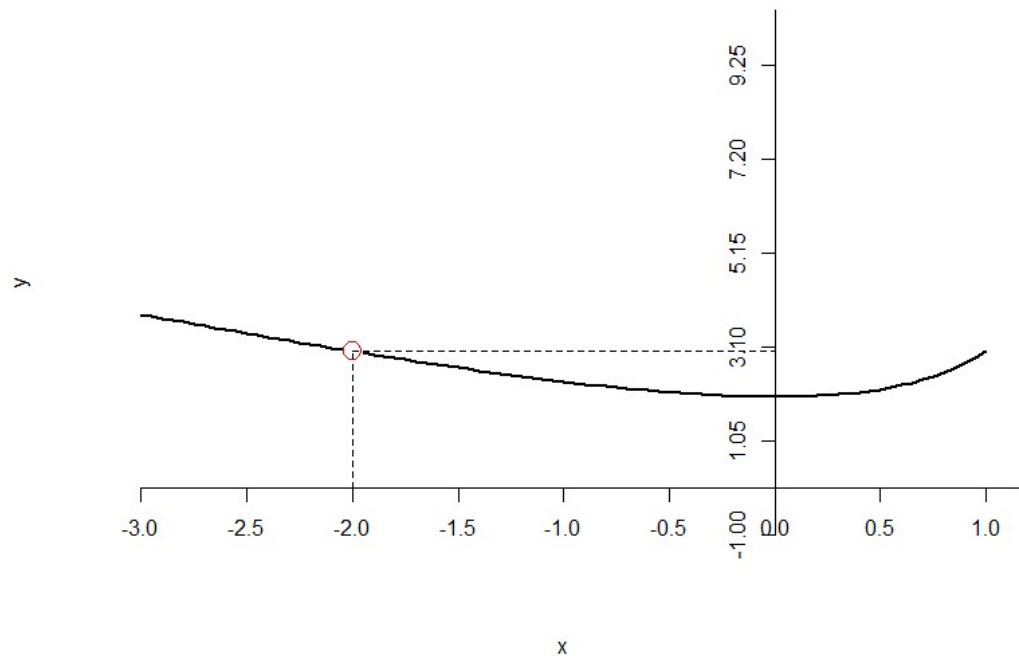
2b)



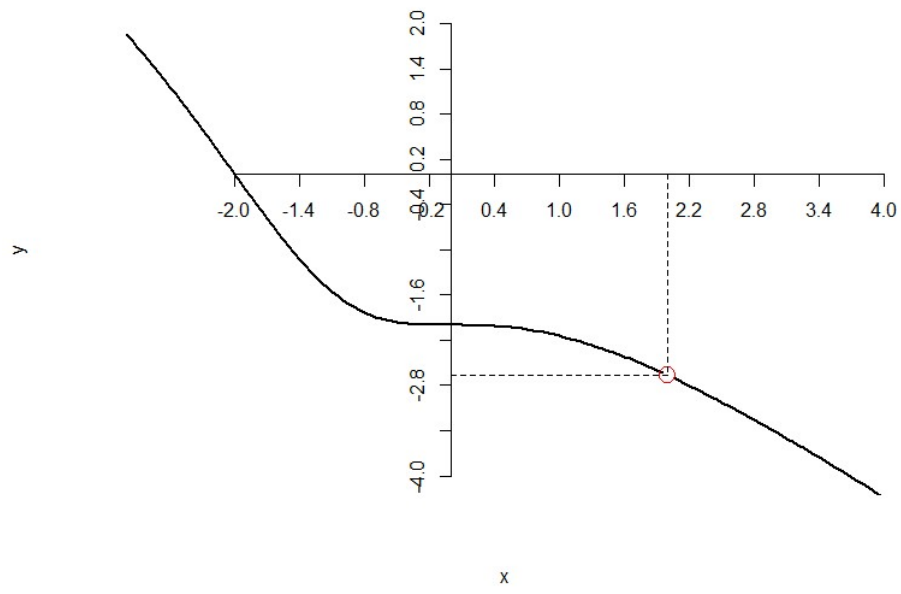
2c)



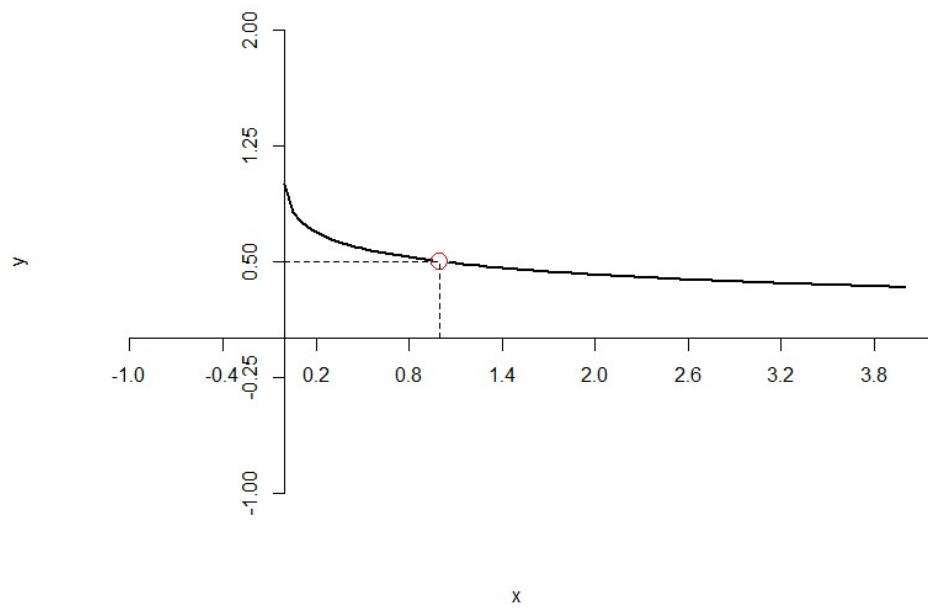
2d)



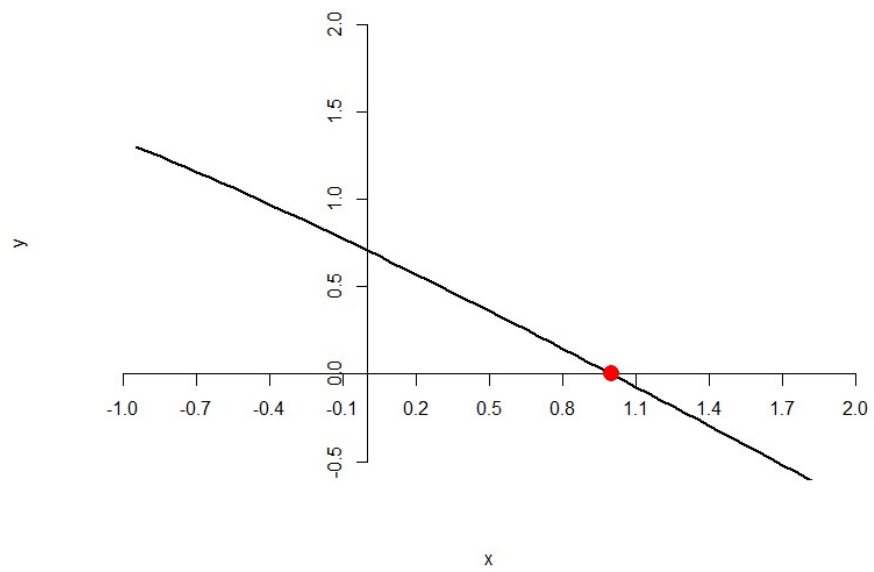
2e)



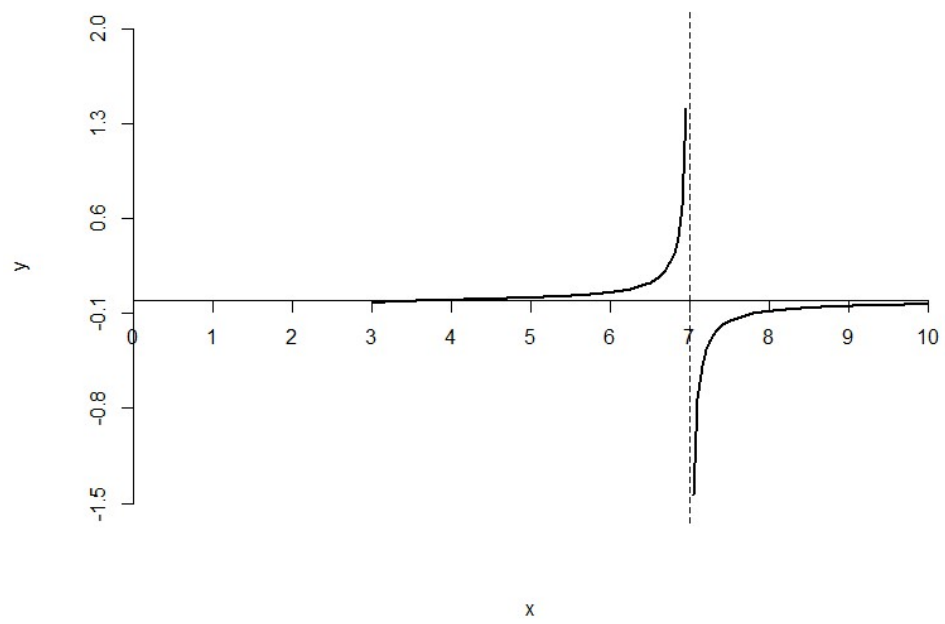
2f)



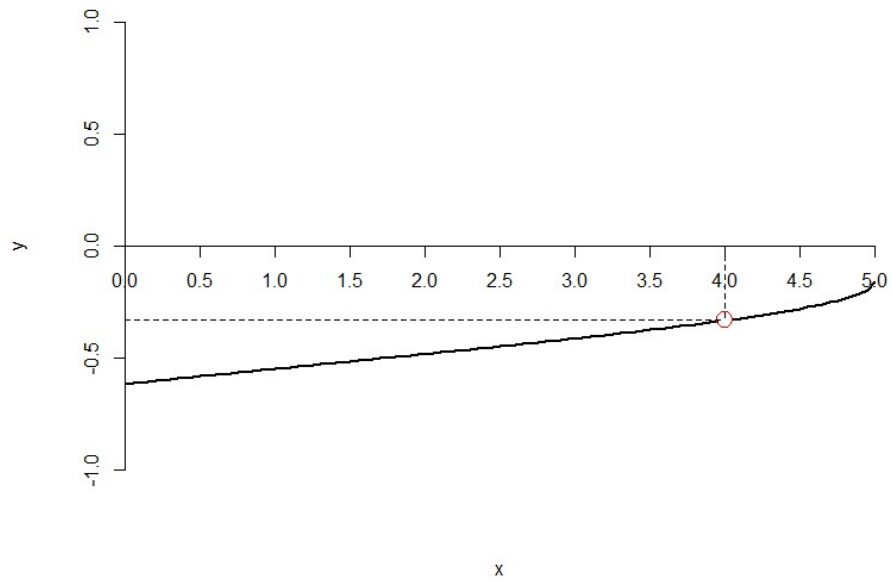
2g)



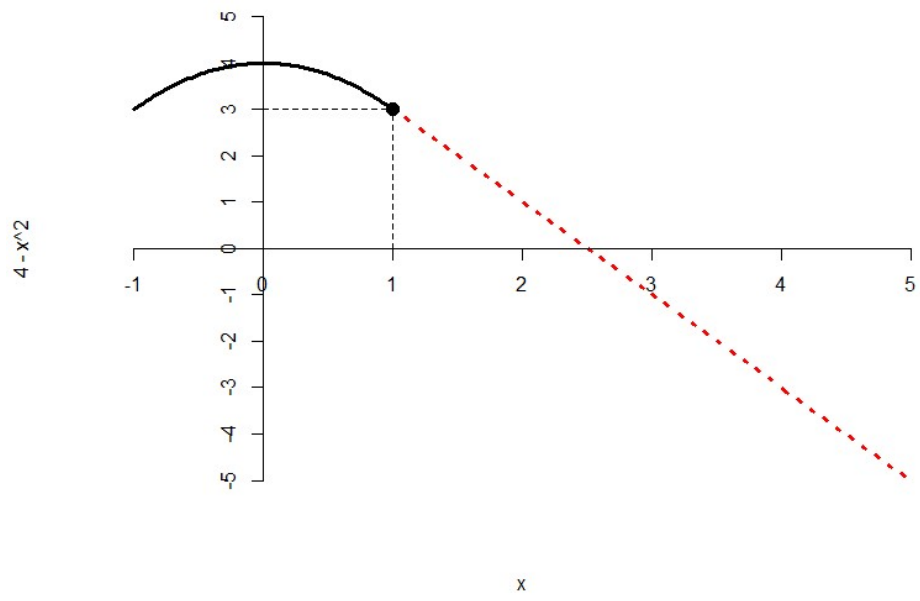
2h)



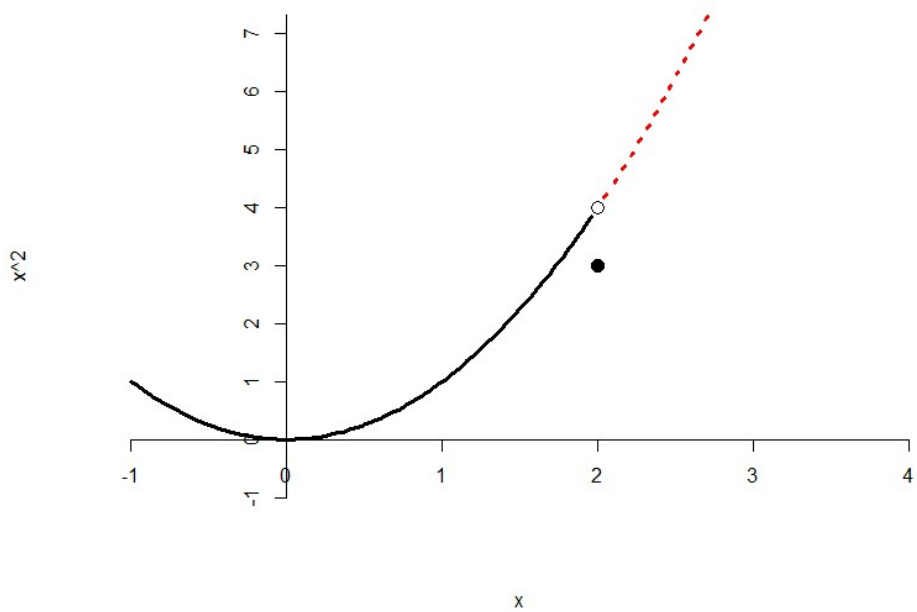
2i)



2j)



2k)



exercício 3)

