

I) Verificar se é contínua:

1.  $f(x) = \begin{cases} \frac{5}{x-4}, & \text{se } x \neq 4 \\ 1, & \text{se } x = 4 \end{cases};$

2.  $f(x) = \begin{cases} 1+x, & \text{se } x \leq -2 \\ 2-x, & \text{se } -2 < x < 2 \\ 2x-1, & \text{se } x \geq 2 \end{cases};$

3.  $f(x) = \begin{cases} -1, & \text{se } x < 0 \\ 0, & \text{se } x = 0 \\ x, & \text{se } x > 0 \end{cases};$

4.  $f(x) = \frac{x^4-16}{x^2-4}$

5.  $f(x) = \begin{cases} \frac{x^2+x-6}{x+3}, & \text{se } x \neq -3 \\ 1, & \text{se } x = -3 \end{cases};$

6.  $f(x) = \frac{x^2-4}{x^4-16};$

7.  $f(x) = \begin{cases} 3x-2, & \text{se } x < 1 \\ x^2, & \text{se } x \geq 1 \end{cases};$

8.  $f(x) = \frac{x+3}{x^2+x-6};$

9.  $f(x) = \begin{cases} \sqrt{25-x^2}, & \text{se } |x| \leq 5 \\ 1, & \text{se } |x| > 5 \end{cases};$

10.  $f(x) = \left| \frac{x}{3} - 2 \right|;$

11.  $f(x) = \frac{x}{\ln(x+1)};$

12.  $f(x) = \frac{|x+3|+|x|+3}{x};$

13.  $f(x) = \begin{cases} \frac{x-3}{|x-3|}, & \text{se } x \neq 3 \\ 1, & \text{se } x = 3 \end{cases};$

14.  $f(x) = \frac{x-3}{|x-3|};$

15.  $f(x) = \frac{2x-1}{x^2-x^3};$

16.  $f(x) = \sqrt{x} + 4;$

17.  $f(x) = \frac{|3x^2+2x|}{x};$

18.  $f(x) = \frac{x^2-x}{|x|};$

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

20.  $f(x) = \begin{cases} \frac{x}{x^2+2}, & \text{se } x < 3 \\ 0, & \text{se } x = 3 \\ \frac{1}{x-3}, & \text{se } x > 3 \end{cases};$

21.  $f(x) = \frac{e^{\frac{1}{2x}}}{x+2};$

22.  $f(x) = \begin{cases} \frac{\ln(1+x)}{x+1}, & \text{se } -1 < x < 0 \\ \frac{2x^2}{x+1}, & \text{se } x \geq 0 \end{cases};$

23.  $f(x) = \frac{1}{e^{\frac{1}{x}}+1};$

24.  $f(x) = \begin{cases} \cos x, & \text{se } x < 0 \\ \frac{1}{x^2+1}, & \text{se } x \geq 0 \end{cases};$

25.  $f(x) = \frac{x^2-4}{x(x-5)};$

26.  $f(x) = \begin{cases} \ln x, & \text{se } 0 < x < \frac{\pi}{4} \\ \text{tg}(x), & \text{se } \frac{\pi}{4} < x < \frac{\pi}{2} \end{cases};$

II) Em que condições as funções são contínuas? e descontínuas?

$$1) \quad g(x) = \begin{cases} (1-3x)^{2/x} & \text{se } x < 0 \\ C & \text{se } x = 0 \\ \frac{\sqrt{1+x} - \sqrt{1-x}}{Kx} & \text{se } x > 0 \end{cases}$$

$$2) \quad F(t) = \begin{cases} \frac{(4+t)^2 - 16}{t} & \text{se } t < 0 \\ At + B & \text{se } 0 \leq t \leq 3 \\ \frac{t^3 - 9t}{t^2 - 5t + 6} & \text{se } t > 3 \end{cases}$$

$$3) \quad f(x) = \begin{cases} 2kx, & \text{se } x \leq 1 \\ x + k, & \text{se } 1 < x < 2 \\ \frac{2}{kx}, & \text{se } x \geq 2 \end{cases}$$

$$4) \quad f(x) = \begin{cases} x^2 + 2ax + b + 15, & \text{se } x < -1 \\ 5, & \text{se } x = -1 \\ bx^3 - ax^2, & \text{se } x > -1 \end{cases}$$