

**1) Calcular:**

$$\lim_{x \rightarrow 2} (3x^2 + 2x)$$

$$\lim_{x \rightarrow -1} (-3x^2 + 4x - 3)$$

$$\lim_{x \rightarrow 2} \frac{x \cdot (x - 2)}{2x - 4} =$$

$$\lim_{x \rightarrow 2} \frac{x^2 + 2x - 8}{x - 2} =$$

$$\lim_{x \rightarrow 2} \frac{x^2 + 4x + 4}{x^2 + 2x} =$$

$$\lim_{x \rightarrow 2} \left( \frac{x^2 - 4}{(x + 2)(-x + 3)} \right)$$

$$\lim_{x \rightarrow -1} \left( \frac{-2x^2 + 3x + 5}{-3x^2 + x + 4} \right)$$

$$\lim_{x \rightarrow 3} \left( \frac{6 - 2x - 3x^2 + x^3}{2x^2 - x - 15} \right)$$

$$\lim_{x \rightarrow 2} \left( \frac{x^2 + 4x - 12}{x^3 - 2x^2} \right)$$

$$\lim_{x \rightarrow -1} \frac{x^3 - 4x^2 + x + 6}{x^2 + x} =$$

$$\lim_{x \rightarrow 2} \frac{5x^3 - 15x^2 + 20}{3x^3 - 15x^2 + 24x - 12}$$

$$\lim_{x \rightarrow 2} \left( \frac{x^3 + 8}{-3x^2 - x + 10} \right)$$

$$\lim_{x \rightarrow 0} \frac{3x^2 + 2x}{x^2 + x} =$$

$$\lim_{x \rightarrow 0} \left( \frac{x^2 + 4x^3}{x^3 - 2x^2} \right)$$

$$\lim_{x \rightarrow 3} \frac{2}{x - 3} - \frac{12}{x^2 - 9}$$

**2) Calcular:**

a)  $\lim_{x \rightarrow \pm\infty} (-x^2 + 3x)$

b)  $\lim_{x \rightarrow \pm\infty} \left( \frac{-4x + 1}{x - 2} \right)$

c)  $\lim_{x \rightarrow \pm\infty} \left( \frac{x^2 + x + 1}{-3x^2 + 2x - 2} \right)$

d)  $\lim_{x \rightarrow +\infty} \frac{3x + 1}{x^2} =$

e)  $\lim_{x \rightarrow +\infty} \frac{3x^2 + 1}{x} =$

f)  $\lim_{x \rightarrow +\infty} \frac{3x^2 + x}{x^3 + 4x} =$

g)  $\lim_{x \rightarrow \pm\infty} \left( \frac{-4x^2 + 1}{x + 1} \right)$

h)  $\lim_{x \rightarrow \pm\infty} \left( \frac{3x^3 + 2x^2 + 1}{4x^4 - x^2 + 5} \right)$

i)  $\lim_{x \rightarrow \pm\infty} \left( \frac{-4x^3 + 2x^2 + 1}{x - 5} \right)$

j)  $\lim_{x \rightarrow +\infty} \frac{x - 1}{x^2 - 1} - \frac{x - 2}{x - 1} =$

k)  $\lim_{x \rightarrow +\infty} \frac{2x^2 - 5x + 7}{x + 3} - 2x =$

**3) Calcular:**

a)  $\lim_{x \rightarrow 0^{\pm}} \frac{x + 3}{x^2 + 2x}$

b)  $\lim_{x \rightarrow 3^{\pm}} \frac{21}{(x - 3)}$

c)  $\lim_{x \rightarrow -\frac{5}{2}^{\pm}} \frac{3x + 1}{2x + 5}$

d)  $\lim_{x \rightarrow 0^{\pm}} \frac{x^4 + 5x^3 + 4x^2}{x^5 - x^3}$

e)  $\lim_{x \rightarrow 1^{\pm}} \left( \frac{4x}{1 - x} \right)$

f)  $\lim_{x \rightarrow -2^{\pm}} \left( \frac{x + 1}{x + 2} \right)$

g)  $\lim_{x \rightarrow -3^{\pm}} \left( \frac{3x - 1}{(x + 3)^2} \right)$

h)  $\lim_{x \rightarrow -\infty} \frac{\sqrt{x^2 + 1}}{5x - 1}$

i)  $\lim_{x \rightarrow -\infty} \left( \frac{x^2 - 4}{x - 4} - \frac{x^2 - 6}{x - 6} \right)$

k)  $\lim_{x \rightarrow 2^{\pm}} \left( \frac{-2x^2 + 8x - 8}{x^3 - 6x^2 + 12x - 8} \right)$

l)  $\lim_{x \rightarrow 1^{\pm}} \left( \frac{3x^3 - 2x^2 - 2x + 1}{-2 \cdot (x - 1)^2} \right)$

**4) Calcular:**

$$\lim_{x \rightarrow 0} L|x + 1| =$$

$$\lim_{x \rightarrow +\infty} L|x + 3| = \lim_{x \rightarrow -\infty} L \left| \frac{x + 1}{2} \right| =$$

$$\lim_{x \rightarrow -5} L|x| =$$

$$\lim_{x \rightarrow +\infty} e^{x+3} =$$

$$\lim_{x \rightarrow 1} e^{\frac{x-1}{x^2+2x-3}} =$$

$$\lim_{x \rightarrow 0} 4 \cdot e^{\frac{x^2+2x}{4x^2+x}} =$$

$$\lim_{x \rightarrow +\infty} e^x + 2x =$$

$$\lim_{x \rightarrow -\infty} \frac{e^x + 1}{L(-x)}$$

$$\lim_{x \rightarrow -1^{\pm}} e^{\frac{x}{x+1}}$$

$$\lim_{x \rightarrow 0^+} \frac{Lx}{x + 3}$$

$$\lim_{x \rightarrow 1^+} L \left| \frac{x^2 - 4}{1 - x} \right|$$

$$\lim_{x \rightarrow 2^+} L \left| \frac{x^2 - 4}{1 - x} \right|$$

$$\lim_{x \rightarrow 3^+} L \left| \frac{2x^2}{3 - x} \right|$$

$$\lim_{x \rightarrow 3^+} L \left| \frac{x + 2}{x - 3} \right|$$

$$\lim_{x \rightarrow +\infty} L \left| \frac{x^2 - 4}{1 - x} \right|$$

$$\lim_{x \rightarrow -2^+} L \left| \frac{x+4}{1-x} \right| + \frac{x}{x+2}$$

$$\lim_{x \rightarrow -4^+} L \left| \frac{x+4}{1-x} \right| + \frac{x}{x+2}$$

$$\lim_{x \rightarrow -1^+} L \left| \frac{x+4}{1-x} \right| + \frac{x}{x+2}$$

$$\lim_{x \rightarrow +\infty} \frac{e^{2x} + 1}{e^x}$$

$$\lim_{x \rightarrow +\infty} \frac{L(x^3)}{L(2x)}$$

$$\lim_{x \rightarrow +\infty} \frac{L(x^3 + 2x^2 + 5x + 3)}{L(2x)}$$

$$\lim_{x \rightarrow +\infty} \frac{L(x^3 + 2x^2 + 5x + 3)}{L(5x^3 + 4x)}$$

5) **Calcular:**

$$\lim_{x \rightarrow 1} \frac{Lx}{2x-2}$$

$$\lim_{x \rightarrow 0} \frac{L(1+3x)}{2x}$$

$$\lim_{x \rightarrow +\infty} (e^{\sqrt{x}} - 1)(x^2 + 3)$$

$$\lim_{x \rightarrow 1} \frac{e^{x^2-1} - 1}{3x-3}$$

$$\lim_{x \rightarrow +\infty} 2x^2 (e^{\sqrt{x^2}} - 1)$$

$$\lim_{x \rightarrow +\infty} x (e^{x+1/x} - e)$$

$$\lim_{x \rightarrow +\infty} (x+1)e^{\sqrt[3]{x-2}} - x$$

$$\lim_{x \rightarrow -\infty} (2x-3)e^{\sqrt[4]{x+4}} - 2x$$

$$\lim_{x \rightarrow -\infty} (-4x+2)e^{\sqrt[3]{x-4}} + 4x$$

$$\lim_{x \rightarrow -\infty} (2x-5)e^{\sqrt[3]{x+1}} - 2ex$$

$$\lim_{x \rightarrow +\infty} (L(x+1) - L(x+3)) \cdot (2x+1)$$

$$\lim_{x \rightarrow +\infty} \frac{(x^2+1)(e^{\sqrt{x^2+1}} - 1)}{4x}$$

$$\lim_{x \rightarrow 0} \frac{L\left(\frac{1+x}{1-x}\right)}{x^2 - x}$$

6) **Ídem:**

$$\lim_{x \rightarrow +\infty} \frac{Lx}{x+3}$$

$$\lim_{x \rightarrow +\infty} \frac{Lx}{e^x + 3}$$

$$\lim_{x \rightarrow +\infty} \frac{Lx+x}{e^x + 3}$$

$$\lim_{x \rightarrow +\infty} \frac{Lx+x}{2x+3}$$

$$\lim_{x \rightarrow +\infty} \frac{x.Lx}{3x+5}$$

$$\lim_{x \rightarrow +\infty} \frac{x.Lx}{e.x + \pi}$$

$$\lim_{x \rightarrow +\infty} \frac{3^{x-2}}{L|x^2+1|}$$

$$\lim_{x \rightarrow +\infty} \frac{L(x^2-x)}{(x^2-3x)^2}$$

$$\lim_{x \rightarrow +\infty} e^{2x-3} - L(x+5) - x^{35}$$

$$\lim_{x \rightarrow +\infty} x.Lx - 5x$$

$$\lim_{x \rightarrow +\infty} x.Lx - 5x^2$$

$$\lim_{x \rightarrow -\infty} x.e^x$$

7) Dadas las siguientes funciones.

Estudiar: a) Dominio b) Signo c) Límites laterales en puntos de no existencia. d) Límites cuando  $x \rightarrow \pm\infty$  e) Bosquejar una función que cumpla con la información obtenida.

$$f: f(x) = \frac{-3x-3}{x}$$

$$g: g(x) = \frac{-3x^2+3}{x+5}$$

$$h: h(x) = \frac{x^2-7x+10}{(x-5)^2}$$

$$i: i(x) = \frac{-2x^2+x+1}{-x^2+4x-3}$$

$$j: j(x) = \frac{x^2-25}{(x^2-3x-10)(-2x-10)}$$

8) **Ídem anterior**

$$f: f(x) = e^{\frac{1}{x+1}}(x+2)$$

$$f: f(x) = \frac{e^{x+2}}{x^2-4}$$

$$f: f(x) = L \left| \frac{x+2}{x-1} \right|$$

$$f: f(x) = L \left| \frac{x^2-9}{-x+2} \right|$$

$$f: f(x) = \frac{1}{x+1} + L \left| \frac{x}{x^2-4} \right|$$

$$f: f(x) = \frac{x+3}{L|x+2|}$$