

Calcula los siguientes límites

1.  $\lim_{x \rightarrow \frac{1}{2}} \frac{x^2 - 5x + 2}{x^2 + 3x - 3}$   $\frac{1}{5}$
  2.  $\lim_{x \rightarrow 4} \frac{2x^2 - 7x - 4}{x^3 + x^2 - 10}$   $0$
  3.  $\lim_{x \rightarrow 3^+} \frac{x + 2}{x^2 - 4x + 3}$   $+\infty$
  4.  $\lim_{x \rightarrow 3^-} \frac{x + 2}{x^2 - 4x + 3}$   $-\infty$
  5.  $\lim_{x \rightarrow 3} \frac{x + 2}{x^2 - 4x + 3}$  No existe <sup>(1)</sup>
  6.  $\lim_{x \rightarrow 3} \frac{x^2 + 5}{x^2 - 6x + 9}$   $+\infty$  <sup>(2)</sup>
  7.  $\lim_{x \rightarrow -1} \frac{x + 1}{x^3 + 3x^2 + 3x + 1}$   $+\infty$
  8.  $\lim_{x \rightarrow -2} \frac{x^2 + 4x + 4}{x^3 + 6x^2 + 12x + 8}$  .  
 Ayuda:  $\begin{cases} x^2 + 4x + 4 = (x + 2)^2 \\ x^3 + 6x^2 + 12x + 8 = (x + 2)^3 \end{cases}$  No existe
  9.  $\lim_{x \rightarrow 3} \sqrt{\frac{x^3 - 2x + 5}{4x^2 - x + 2}}$   $\sqrt{\frac{26}{35}}$
  10.  $\lim_{x \rightarrow 5} \frac{x^2 - 25}{10 - 2x}$   $-5$
  11.  $\lim_{x \rightarrow 3} \frac{(x - 1)(x - 3)^3}{(2x + 1)(2x - 1)(x - 3)^2}$   $0$
  12.  $\lim_{x \rightarrow 4} \frac{x^2 - 16}{\sqrt{2x + 1} - 3}$   $24$
  13.  $\lim_{x \rightarrow 1} \frac{\sqrt{x + 1} - 2}{\sqrt{2x + 10} - \sqrt{5x + 1}}$   $-\frac{1}{3}\sqrt{3}$
  14.  $\lim_{x \rightarrow 3} \frac{\sqrt{x + 1} - 2}{\sqrt{2x + 10} - \sqrt{5x + 1}}$   $-\frac{2}{3}$
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- <sup>1</sup>  $\lim_{x \rightarrow 3^+} \frac{x + 2}{x^2 - 4x + 3} = +\infty$  y  $\lim_{x \rightarrow 3^-} \frac{x^2 + 5}{x^2 - 6x + 9} = -\infty$   
<sup>2</sup>  $x^2 - 6x + 9 = (x - 3)^2$

15.  $\lim_{x \rightarrow -a} \frac{x^5 + a^5}{x^4 - a^4}$   $-\frac{5}{4}a$
16.  $\lim_{h \rightarrow 0} \frac{(x+h)^4 - x^4}{h}$   $4x^3$
17.  $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x^3 - 2x^2 + 4x - 8}$   $\frac{1}{2}$
18.  $\lim_{x \rightarrow -2} \frac{2x^3 + 9x^2 + 12x + 4}{3x^3 + 11x^2 + 8x - 4}$   $\frac{3}{7}$
19.  $\lim_{x \rightarrow 0} \frac{\sqrt{x+4} - 2}{x}$   $\frac{1}{4}$
20.  $\lim_{h \rightarrow 0} \frac{\sqrt{x+h} - \sqrt{x}}{h}$   $\frac{1}{2\sqrt{x}}$
21.  $\lim_{x \rightarrow 1} \frac{\sqrt[3]{x^2 - 1}}{\sqrt[6]{x^3 - 3x + 2}}$   $\sqrt[6]{\frac{4}{3}}$
22.  $\lim_{x \rightarrow 5} \frac{2x - 10}{\sqrt{x+4} - 3}$   $12$
23.  $\lim_{x \rightarrow 2} \frac{x^2 + 2x - 8}{x^3 - 6x^2 + 11x - 6}$   $-6$
24.  $\lim_{x \rightarrow 0} \frac{x^2 - x}{5x^2 + 3x}$   $-\frac{1}{3}$
25.  $\lim_{x \rightarrow 2} \frac{x^3 - 4x^2 + 4x}{x^3 - 3x^2 + 4}$   $\frac{2}{3}$
26.  $\lim_{x \rightarrow 2} \left[ \frac{x^2 - 13x + 22}{x^2 - 8x + 12} \right]^{\frac{x-1}{2}}$   $\frac{3}{2}$
27.  $\lim_{x \rightarrow 3} \frac{\sqrt{\frac{x}{3}} - 1}{x - 3}$   $\frac{1}{6}$
28.  $\lim_{x \rightarrow 3} \frac{x - \sqrt{6+x}}{x - 3}$   $\frac{5}{6}$
29.  $\lim_{x \rightarrow -1} \frac{x^4 - 1}{x^3 + 1}$   $-\frac{4}{3}$
30.  $\lim_{x \rightarrow 1} \frac{x^2 + x - 2}{\sqrt{x+3} - 2}$   $12$
31.  $\lim_{x \rightarrow 3} e^{\frac{2x-4}{x^2-4}}$   $\sqrt{e}$