

1) Calcula los siguientes límites:

$$a) \lim_{x \rightarrow 4} \frac{2x^2 - 7x - 4}{x^3 + x^2 - 10} \quad (\text{sol: } 0)$$

$$b) \lim_{x \rightarrow -1} \frac{x^3 + 1}{x^4 - 1} \quad (\text{sol: } -3/4)$$

$$c) \lim_{x \rightarrow 3} \frac{x^2 + 5}{x^2 - 6x + 9} \quad (\text{sol: } +\infty)$$

$$d) \lim_{x \rightarrow \infty} \frac{x^3 - 5x + 2}{2x^5 - 4x^3 + x - 3} \quad (\text{sol: } 0)$$

$$e) \lim_{x \rightarrow \infty} \frac{-4x^3 + 2x - 1}{3x^2 - 2x + 9} \quad (\text{sol: } -\infty)$$

$$f) \lim_{x \rightarrow 3} \sqrt{\frac{x^3 - 2x + 5}{4x^2 - x + 2}} \quad (\text{sol: } \sqrt{\frac{26}{35}})$$

$$g) \lim_{x \rightarrow \infty} \frac{\sqrt{3x^2 + x + 5x}}{25x + 6\sqrt{x}} \quad (\text{sol: } \frac{\sqrt{3} + 5}{25})$$

$$h) \lim_{x \rightarrow 4} \frac{x^2 - 16}{\sqrt{2x + 1} - 3} \quad (\text{sol: } 24)$$

$$i) \lim_{x \rightarrow \infty} (\sqrt{x^2 + 5x - 3} - x) \quad (\text{sol: } 5)$$

$$j) \lim_{x \rightarrow 0} \frac{\sqrt{x + 4} - 2}{x} \quad (\text{sol: } 1/4)$$

$$k) \lim_{x \rightarrow +\infty} \frac{\sqrt{2}x^3 - 3x^2 + 5}{(1 - \sqrt{3})x^3 - 2\sqrt{2}x} \quad (\text{sol: } \frac{\sqrt{2}}{1 - \sqrt{3}})$$

$$l) \lim_{x \rightarrow \infty} \left(\frac{3x^3 - 2x + 1}{5x + 2} \cdot \frac{x^2 + 5x}{4x^4 + 2x + 3} \right) \quad (\text{sol: } 3/20)$$

$$m) \lim_{x \rightarrow 9^+} \frac{\sqrt{x^2 - 12x + 27}}{\sqrt{x^2 + 8x - 9}} \quad (\text{sol: } 0)$$

$$n) \lim_{x \rightarrow 1} \frac{\sqrt[3]{x^2 - 1}}{\sqrt[6]{x^3 - 3x + 2}} \quad (\text{sol: } \sqrt[6]{\frac{4}{3}})$$

$$o) \lim_{x \rightarrow \infty} \frac{\sqrt{x+1} - \sqrt{x-1}}{\sqrt{x}} \quad (\text{sol: } 0)$$

$$p) \lim_{x \rightarrow 5} \frac{x^2 - 25}{x^2 - 6x + 5} \quad (\text{sol: } 5/2)$$

$$q) \lim_{x \rightarrow 2} \frac{x^2 - 4}{(x-2)(x^2 + 4)} \quad (\text{sol: } 1/2)$$

$$r) \lim_{x \rightarrow 5} \frac{2x - 10}{\sqrt{x + 4} - 3} \quad (\text{sol: } 12)$$

$$s) \lim_{x \rightarrow 3} \frac{\sqrt{x+1} - 2}{\sqrt{2x+10} - \sqrt{5x+1}} \quad (\text{sol: } -2/3)$$

$$t) \lim_{x \rightarrow -a} \frac{x^5 + a^5}{x^4 - a^4} \quad (\text{sol: } -\frac{5a}{4})$$

$$u) \lim_{x \rightarrow \infty} (\sqrt{2x^2 + 2x + 1} - \sqrt{2x^2 + x + 1}) \quad (\text{sol: } \frac{\sqrt{2}}{4})$$

$$v) \lim_{x \rightarrow -2} \frac{2x^3 + 9x^2 + 12x + 4}{3x^3 + 11x^2 + 8x - 4} \quad (\text{sol: } 3/7)$$

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

(sol: 2/9)

$$x) \lim_{x \rightarrow \infty} \frac{x^3\sqrt{x} + 3x + \sqrt[3]{2x^2 + 1}}{\sqrt[3]{2x^5 + 4} + \sqrt[3]{x^3 + x^2 + 2}} \quad (\text{sol: } 0)$$

$$y) \lim_{x \rightarrow 3} \frac{(x-1)(x-3)^3}{(2x+1)(2x-1)(x-3)^2} \quad (\text{sol: } 0)$$

2) Calcula:

$$a) \lim_{x \rightarrow \infty} (\sqrt{x^3 - x^2 + 4} - \sqrt{x^3 - x + 4}) \quad (S: -\infty)$$

$$b) \lim_{x \rightarrow +\infty} (\sqrt{x^2 + x} - x) \quad (S: 1/2)$$

$$c) \lim_{x \rightarrow -1} \frac{x^3 + x^2 + x + 1}{x^4 - 1} \quad (S: -1/2)$$

$$d) \lim_{x \rightarrow +\infty} (\sqrt{x+2} - \sqrt{x-2}) \quad (S: 0)$$

$$e) \lim_{x \rightarrow +\infty} \frac{x^2 - 6x + 6}{x^2 - 2} \quad (S: 1)$$

$$f) \lim_{x \rightarrow +\infty} (\sqrt{x^2 + 1} - \sqrt{x^2 - 1}) \quad (S: 0)$$

$$g) \lim_{x \rightarrow -2} \frac{x^3 + 2x^2 - 4x - 8}{x^3 + 3x^2 - 4} \quad (S: 4/3)$$

$$h) \lim_{x \rightarrow 0} \frac{1 - \sqrt{1 - x^2}}{x} \quad (S: 0)$$

$$i) \lim_{x \rightarrow -\infty} \frac{\sqrt[3]{x} - 1}{\sqrt[3]{1 - x}} \quad (S: -1)$$

$$j) \lim_{x \rightarrow +\infty} \frac{(1+x)^2 - 1}{x} \quad (S: +\infty)$$

$$k) \lim_{x \rightarrow +\infty} \left(\sqrt{\frac{x+1}{x+4}} \right)^x \quad (S: e^{-3/2})$$

$$l) \lim_{x \rightarrow 4} \frac{x^2 - 16}{\sqrt{2x+1} - 3} \quad (S: 24)$$

$$m) \lim_{x \rightarrow 4} \frac{x^2 - 6x + 8}{x - 4} \quad (S: 1)$$

$$n) \lim_{x \rightarrow -1} \left(\frac{3}{x+1} - \frac{2}{x^2 - 1} \right) \quad (S: \infty)$$

$$\tilde{n}) \lim_{x \rightarrow 2} \left(\frac{x+2}{x^2} \right)^{x-2} \quad (S: e^{-9/4})$$

$$o) \lim_{x \rightarrow 0} \frac{x}{1 - \sqrt{x+1}} \quad (S: -2)$$

$$p) \lim_{x \rightarrow \infty} \frac{2x^2 - 14x + 1}{x^2 - 10x + 5} \quad (S: 2)$$

$$q) \lim_{x \rightarrow 3} \frac{\sqrt{x+1} - 2}{x - 3} \quad (S: 1/4)$$

$$r) \lim_{x \rightarrow 2} \frac{x^2 - 4}{(x-2)(x^2 + 4)} \quad (S: 1/2)$$

$$s) \lim_{x \rightarrow 1} \frac{\sqrt{x} - 1}{x - 1} \quad (S: 1/2)$$

$$t) \lim_{x \rightarrow 2} \frac{\sqrt{x+2} - 2}{\sqrt{x+7} - 3} \quad (S: 3/2)$$

$$u) \lim_{x \rightarrow 0} \frac{\sqrt{1-x} - 1}{x} \quad (S: -1/2)$$

$$v) \lim_{x \rightarrow +\infty} (\sqrt{x+1} - x) \quad (S: -\infty)$$

$$x) \lim_{x \rightarrow +\infty} (\sqrt{1+x} - \sqrt{x}) \quad (S: 0)$$

$$y) \lim_{x \rightarrow 5} \frac{2x - 10}{\sqrt{x+4} - 3} \quad (S: 12)$$

$$z) \lim_{x \rightarrow 0} \frac{\sqrt{1-x} - \sqrt{1+x}}{x} \quad (S: -1)$$