

LIMITES

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

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

c) $\lim_{x \rightarrow 2} \frac{x^3 - 7x + 6}{x - 2}$

d) $\lim_{x \rightarrow 3} \frac{x^2 - 2x - 3}{2x^2 - 5x - 3}$

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

f) $\lim_{x \rightarrow 1} \left(\frac{1 - \sqrt[3]{x}}{1 - \sqrt{x}} \right)$

g) $\lim_{x \rightarrow 0} \frac{\sqrt{x^2 + 9} - 3}{x^2}$

h) $\lim_{x \rightarrow 0} \frac{(3 + x)^3 - 27}{x}$

i) $\lim_{x \rightarrow 2} \left(\frac{3x - 6}{1 - \sqrt{4x - 7}} \right)$

j) $\lim_{h \rightarrow 0} \frac{(3 + h)^2 - 9}{h}$

k) $\lim_{x \rightarrow 8} \frac{\sqrt[3]{x} - 2}{x - 8}$

l) $\lim_{x \rightarrow 4} \left(\frac{2x - 8}{\sqrt{x} - 2} \right)$

$$\text{a) } \lim_{n \rightarrow \infty} \frac{2n^2 - 3n + 5}{3n^2 + 5n + 6} =$$

$$\text{b) } \lim_{n \rightarrow \infty} \frac{5n^3 - 7n + 12}{8n^3 + 6n^2 - 3n + 2} =$$

$$\text{c) } \lim_{n \rightarrow \infty} \frac{4n^3 - 5n^2 + 2n + 3}{7n^2 + 3n - 8} =$$

$$\text{d) } \lim_{n \rightarrow \infty} \frac{6n^2 - 7n + 10}{5n^3 + 2n^2 - 4n + 5} =$$

$$\text{e) } \lim_{n \rightarrow \infty} \frac{3n^4 - 5n^2 + 4n - 2}{7n^4 + 6n^3 - 2n + 4} =$$

$$\text{f) } \lim_{n \rightarrow \infty} \frac{2n^3 - 6n^2 + 5n - 4}{1 + 2n + 3n^2 - 5n^3} =$$

$$\text{g) } \lim_{n \rightarrow \infty} \frac{n^2 + 3}{(n-1) \cdot (n-2)} =$$

$$\text{h) } \lim_{n \rightarrow \infty} \frac{n^2 - 1}{(n-1) \cdot (n+2)} =$$

$$\lim_{x \rightarrow +\infty} \left(x + \frac{1}{x}\right)^x = e \quad \text{y} \quad \lim_{x \rightarrow 0} (1+x)^{\frac{1}{x}} = e$$

$$\text{a) } \lim_{n \rightarrow \infty} \left(1 + \frac{8}{n}\right)^n = \quad \text{b) } \lim_{n \rightarrow \infty} \left(1 + \frac{1}{2n}\right)^n = \quad \text{c) } \lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^{\frac{3n}{4}} =$$

$$\text{d) } \lim_{n \rightarrow \infty} \left(1 - \frac{3}{n}\right)^n = \quad \text{e) } \lim_{n \rightarrow \infty} \left(1 + \frac{2}{3n}\right)^n = \quad \text{f) } \lim_{n \rightarrow \infty} \left(1 + \frac{4}{n}\right)^{n-3} =$$

$$\text{g) } \lim_{n \rightarrow \infty} \left(1 + \frac{5}{3n}\right)^{\frac{2n}{5}} = \quad \text{h) } \lim_{n \rightarrow \infty} \left(\frac{n+4}{n-1}\right)^n = \quad \text{i) } \lim_{n \rightarrow \infty} \left(\frac{n-2}{n+1}\right)^n =$$

$$\text{j) } \lim_{n \rightarrow \infty} \left(\frac{n+3}{n+4}\right)^{2n} = \quad \text{k) } \lim_{n \rightarrow \infty} \left(\frac{n+6}{n+3}\right)^{\frac{2n}{5}} = \quad \text{l) } \lim_{n \rightarrow \infty} \left(\frac{n-1}{n-3}\right)^{n-2} =$$

$$\lim_{n \rightarrow \infty} \left(\frac{3n^2 - 2n + 3}{2n + 1} - \frac{6n - 9}{4} \right) =$$

$$\text{b) } \lim_{n \rightarrow \infty} \left(\frac{n^3 - 2n}{n^2 - 2n + 1} - \frac{3n^2 - 4n + 1}{n + 1} \right) =$$

$$\text{c) } \lim_{n \rightarrow \infty} \left(\frac{2n^2 - 4n + 3}{3n - 2} - \frac{4n^2 - 5}{6n + 1} \right) =$$

$$\text{d) } \lim_{n \rightarrow \infty} \left(\frac{3n - 11}{8} - \frac{3n^2 + 5}{8n + 2} \right) =$$

$$\text{e) } \lim_{n \rightarrow \infty} \left(\frac{5n^2 - 6n + 2}{3n + 4} - \frac{5n + 4}{3} \right) =$$

$$\text{f) } \lim_{n \rightarrow \infty} \left(\frac{2 + 3n - 4n^2}{5n + 3} - \frac{6 - 4n}{5} \right) =$$

$$\text{g) } \lim_{n \rightarrow \infty} \left(\frac{2n^3 - 3n}{n^2 + 3} - \frac{6n^2 - 2}{3n + 1} \right) =$$

$$\text{h) } \lim_{n \rightarrow \infty} \left(\sqrt{n^2 - 4} - n \right) =$$

$$\text{i) } \lim_{n \rightarrow \infty} \left(\sqrt{4n^2 - 4} - 2n \right) =$$

$$\text{j) } \lim_{n \rightarrow \infty} \left(\sqrt{n^2 - 9} - n \right) =$$

$$\text{k) } \lim_{n \rightarrow \infty} \left(\frac{\sqrt{9n^2 + 4} - 3n}{2n + 1} \right) =$$

$$\text{l) } \lim_{n \rightarrow \infty} \left(\frac{n - \sqrt{n^2 - 4}}{n + 1} \right) =$$

$$\text{m) } \lim_{n \rightarrow \infty} \left(\frac{3n + 2}{n - \sqrt{n^2 + 5}} \right) =$$

$$\text{n) } \lim_{n \rightarrow \infty} \left(\frac{\sqrt{n^2 - 4} - n}{\sqrt{n^2 - 9} - n} \right) =$$

$$\text{o) } \lim_{n \rightarrow \infty} \left(\frac{2n - \sqrt{4n^2 + 5}}{\sqrt{4n^2 - 9} - 2n} \right) =$$

$$\text{p) } \lim_{n \rightarrow \infty} \left(\sqrt{n^2 + 1} - \sqrt{n^2 - 1} \right) =$$

$$\text{q) } \lim_{n \rightarrow \infty} \left(n - \sqrt{n^2 - 1} \right) =$$

$$\text{l) } \lim_{n \rightarrow \infty} \left(\frac{\sqrt{n^2 + 5n + 3}}{\sqrt{n^2 + 3} - \sqrt{n^2 + 2}} \right) =$$

Calcular $\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$ dadas las funciones :

$$f(x) = 3x + 2$$

$$f(x) = x^2 - 3x + 5$$

$$f(x) = \sqrt{x}$$

$$f(x) = x^3 - 4x^2 + 5x$$