

Continuité 1-1

$$A^2 - B^2 = (A - B)(A + B)$$

$$A^3 - B^3 = (A - B)(A^2 + AB + B^2)$$

$$\lim_{g} \frac{x^2 - 81}{x - 9} = \lim_{g} \frac{x^2 - 9^2}{x - 9} = \lim_{g} \frac{(x - 9)(x + 9)}{x - 9} = \lim_{g} x + 9 = 18$$

$$\begin{aligned} \lim_{3} \frac{x^3 - 27}{x - 3} &= \lim_{3} \frac{x^3 - 3^3}{x - 3} = \lim_{3} \frac{(x - 3)(x^2 + 3x + 3^2)}{x - 3} \\ &= \lim_{3} x^2 + 3x + 9 = 27 \end{aligned}$$

Continuité 1-2

$$\lim_{2} \frac{2x^2 - 5x + 2}{x - 2} = \lim_{2} \frac{(x - 2)(2x - 1)}{x - 2} = \lim_{2} 2x - 1 = 3$$

$$\lim_{1} \frac{3x^2 - 5x + 2}{x - 1} = \lim_{1} \frac{(x - 1)(3x - 2)}{x - 1} = \lim_{1} 3x - 2 = 1$$

$$\lim_{3} \frac{x^2 - 2x - 3}{x^2 - 9} = \lim_{3} \frac{(x - 3)(x + 1)}{(x - 3)(x + 3)} = \lim_{3} \frac{x + 1}{x + 3} = \frac{4}{6} = \frac{2}{3}$$

Continuité 1-3

$$\begin{aligned} \lim_{2} \frac{x^3 - 3x^2 + x + 2}{x - 2} &= \lim_{2} \frac{(x - 2)(x^2 - x - 1)}{(x - 2)} \\ &= \lim_{2} x^2 - x - 1 = 1 \end{aligned}$$

$$\begin{aligned} \lim_{1} \frac{x^3 - 3x + 2}{x - 1} &= \lim_{1} \frac{(x - 1)(x^2 + x - 2)}{x - 1} \\ &= \lim_{1} x^2 + x - 2 = 0 \end{aligned}$$

$$\begin{aligned} \lim_{1} \frac{2x^3 - 3x + 1}{x - 1} &= \lim_{1} \frac{(x - 1)(2x^2 + 2x - 1)}{x - 1} \\ &= \lim_{1} 2x^2 + 2x - 1 \end{aligned}$$

Continuité 1-4

$$\begin{aligned}
 \lim_1 \frac{\sqrt{2x+7}-3}{x-1} &= \lim_1 \frac{(\sqrt{2x+7}-3)(\sqrt{2x+7}+3)}{(x-1)(\sqrt{2x+7}+3)} \\
 &= \lim_1 \frac{(\sqrt{2x+7})^2 - (3)^2}{(x-1)(\sqrt{2x+7}+3)} = \lim_1 \frac{2x+7-9}{(x-1)(\sqrt{2x+7}+3)} \\
 &= \lim_1 \frac{2x-2}{(x-1)(\sqrt{2x+7}+3)} = \lim_1 \frac{2(x-1)}{(x-1)(\sqrt{2x+7}+3)} \\
 &= \lim_1 \frac{2}{\sqrt{2x+7}+3} = \frac{2}{6} = \frac{1}{3}
 \end{aligned}$$

$$\begin{aligned}
 \lim_1 \frac{\sqrt{x^2+x+2}-2}{x^2-1} &= \lim_1 \frac{(\sqrt{x^2+x+2}-2)(\sqrt{x^2+x+2}+2)}{(x^2-1)(\sqrt{x^2+x+2}+2)} \\
 &= \lim_1 \frac{(\sqrt{x^2+x+2})^2 - (2)^2}{(x^2-1)(\sqrt{x^2+x+2}+2)} = \lim_1 \frac{x^2+x+2-4}{(x^2-1)(\sqrt{x^2+x+2}+2)} \\
 &= \lim_1 \frac{x^2+x-2}{(x^2-1)(\sqrt{x^2+x+2}+2)} = \lim_1 \frac{(x-1)(x+2)}{(x-1)(x+1)(\sqrt{x^2+x+2}+2)} \\
 &= \lim_1 \frac{(x+2)}{(x+1)(\sqrt{x^2+x+2}+2)} = \frac{3}{2 \times 4} = \frac{3}{8}
 \end{aligned}$$

$$\begin{aligned}
 \lim_1 \frac{x^2-1}{\sqrt{x}-x} &= \lim_1 \frac{(x^2-1)(\sqrt{x}+x)}{(\sqrt{x}-x)(\sqrt{x}+x)} \\
 &= \lim_1 \frac{(x^2-1)(\sqrt{x}+x)}{(\sqrt{x})^2 - (x)^2} = \lim_1 \frac{(x-1)(x+1)(\sqrt{x}+x)}{x-x^2} \\
 &= \lim_1 \frac{(x-1)(x+1)(\sqrt{x}+x)}{x(1-x)} = \lim_1 \frac{-(x+1)(\sqrt{x}+x)}{1} \\
 &= \frac{-2 \times 2}{1} = -4
 \end{aligned}$$