

Ex 8 : $\lim_{\substack{x \rightarrow 2 \\ x < 2}} \frac{x^2 - 3x + 2}{x^2 - x - 2} = \frac{4 - 6 + 2}{4 - 2 - 2} = \frac{0}{0} = ?$

Num: $\underbrace{x^2 - 3x + 2}_0 \neq 0 = (x - 2)(ax + b)$

$$= ax^2 + bx - 2ax - 2b$$

$$= \underbrace{ax^2} + (b - 2a)x - \underbrace{2b}$$

Donc $a = 1$; $-2b = 2 \Rightarrow b = -1$

$$b - 2a = -1 - 2 = -3$$

Alors $x^2 - 3x + 2 = (x - 2)(x - 1)$

Vérifier : $(x - 2)(x - 1) = x^2 - x - 2x + 2 = x^2 - 3x + 2$

Dén: $\underbrace{x^2 - x - 2}_x = (x - 2)(ax + b) =$

$$= ax^2 + bx - 2ax - 2b =$$

$$= \underbrace{ax^2} + (b - 2a)x - \underbrace{2b}$$

Donc $a = 1$; $-2b = -2 \Rightarrow b = 1$

Alors : $x^2 - x - 2 = (x - 2)(x + 1)$

$$\lim_{\substack{x \rightarrow 2 \\ x < 2}} \frac{x^2 - 3x + 2}{x^2 - x - 2} = \lim_{\substack{x \rightarrow 2 \\ x < 2}} \frac{\cancel{(x - 2)}(x - 1)}{\cancel{(x - 2)}(x + 1)} = \frac{2 - 1}{2 + 1} = \frac{1}{3}$$