Séance du 04/11/19.

$$(m+8)\,x^2 + mx + 1 = 0.$$

On veut que cette éq° admette une unique sol°.

$$\Delta = 0$$

$$b^2 - 4ac = 0$$

$$m^2 - 4 \times (m+8) \times 1 = 0.$$

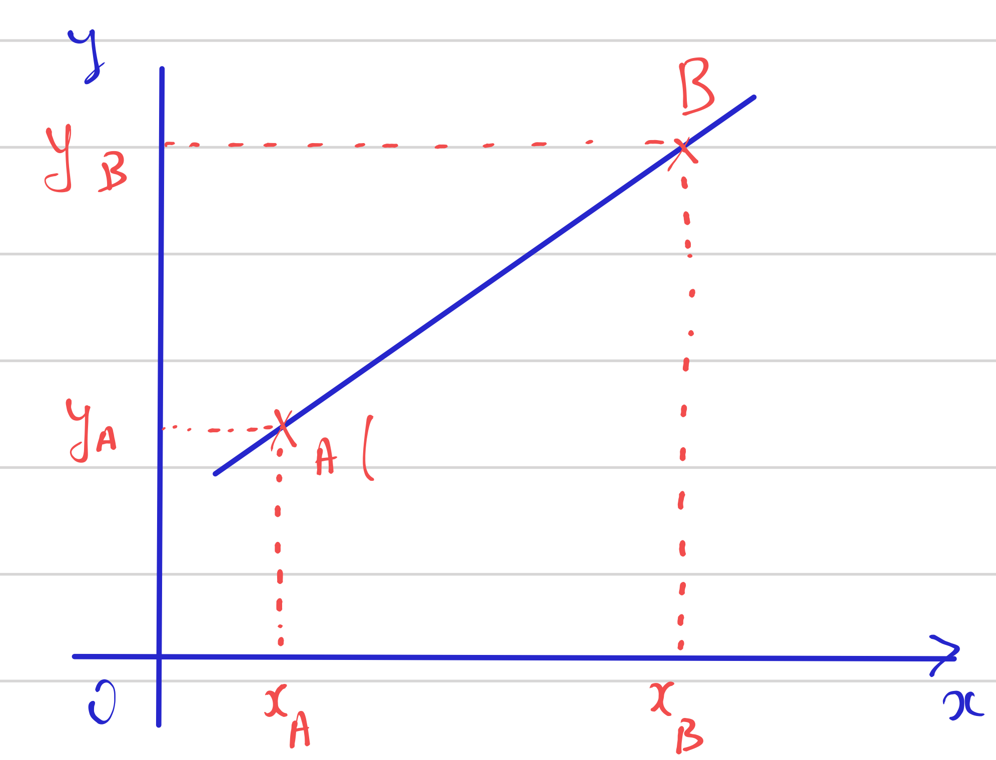
$$m^2 - 4m - 32 = 0.$$

On obtient une nouvelle éq° du second degré d'inconnue m :

$$\Delta = b^2 - 4ac.$$

$$\Delta = (-4)^2 - 4 \times 1 \times (-32)$$

$$\Delta =$$



$$\boxed{y = \underbrace{2}_{a}x + \underbrace{19,4}_{b}.}$$

$$a = \frac{y_B - y_A}{x_B - x_A}.$$

$$y = 2x + b.$$

$$y_A = 2 \times x_A + b.$$

$$19,4 = y_A - 2x_A = b$$

$$\gamma = \frac{1}{\sqrt{1-\frac{v^2}{c^2}}} \qquad \lim_{v \to c} \gamma(v)$$

D'une part : $\lim_{v \to c} \frac{v^2}{c^2} = \frac{c^2}{c^2} = 1.$ $\qquad \lim_{x \to 1} 1+x = 1+1=2.$

Or $\lim_{X \to 1} 1 - X = 0^+$ $\qquad X = \frac{v^2}{c^2}.$

Donc par composition : $\lim_{v \to c} 1-\frac{v^2}{c^2} = 0^+.$

$\lim_{Y \to 0^+} \sqrt{Y} = \sqrt{0} = 0.$

Par composit° $\lim_{v \to c} \sqrt{1-\frac{v^2}{c^2}} = 0^+.$

Or $\lim_{A \to 0^+} \frac{1}{A} = +\infty.$ $\qquad A = 1-\frac{v^2}{c^2}$

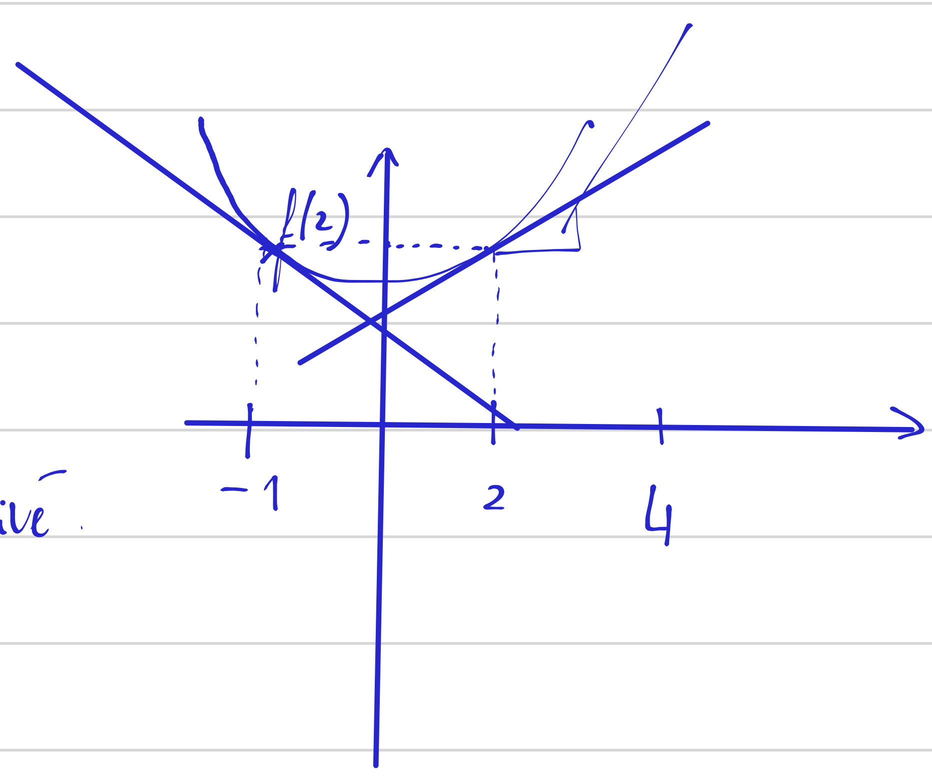
Par composition de limites, $\lim_{v \to c} \gamma = +\infty.$

$f(x) = 2x^2+4$

$f(2)$?

$f'(2)$ nombre dérivé.

$f'(-1)$



$$\boxed{f'(a) = \lim_{h \to 0} \frac{f(a+h) - f(a)}{h}}$$

$f(x) = x^2$. $\qquad f'(2)$:

$f(x) = x^2$

$f(2) = 2^2$

$f(3) = 3^2$

$f(2+h) = (2+h)^2$.

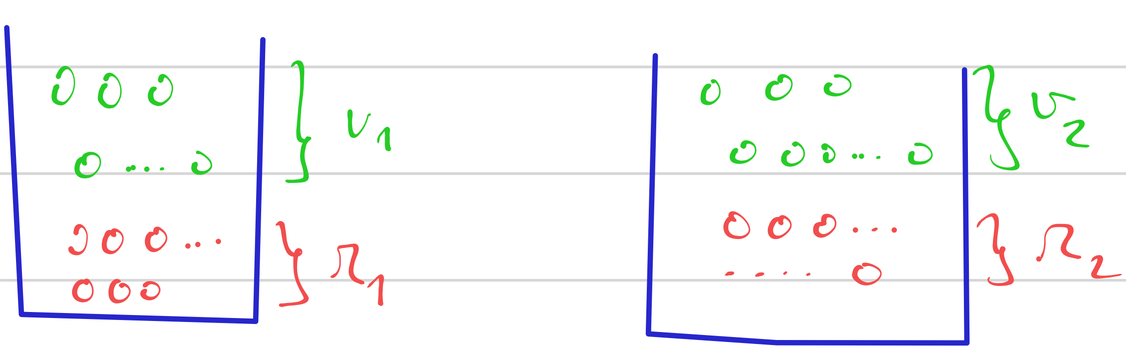
$$f'(2) = \lim_{h \to 0} \frac{f(2+h) - f(2)}{h}$$

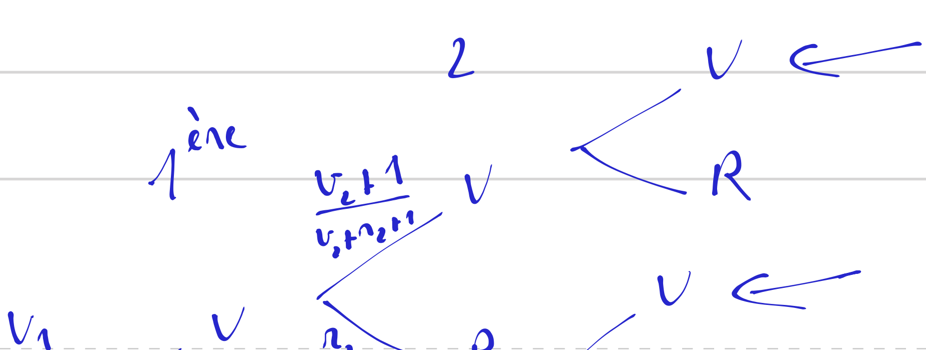
$$= \lim_{h \to 0} \frac{(2+h)^2 - 2^2}{h}$$

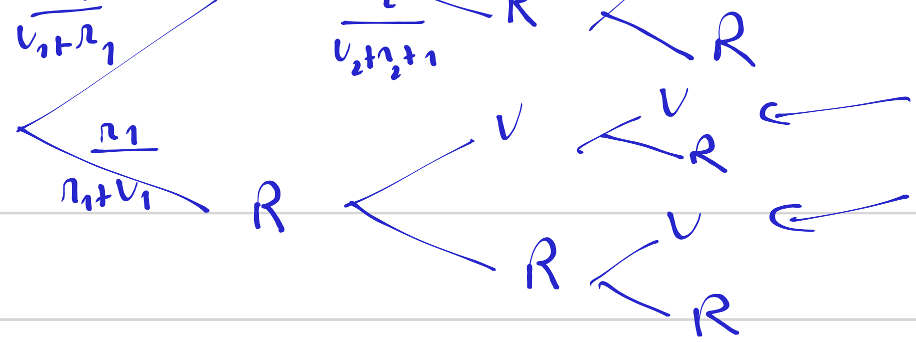
$$= \lim_{h \to 0} \frac{\cancel{4} + 4h + h^2 - \cancel{4}}{h}$$

$$= \lim_{h \to 0} \frac{\cancel{h}(4+h)}{\cancel{h}} = \lim_{h \to 0} 4 + h = 4.$$

$f(x) = 2x^2 \qquad f'(3)$.







$$f(x) = 2x^2 \qquad \text{en } f'(3) :$$

$$f'(3) = \lim_{h\to 0} \frac{f(3+h) - f(3)}{h} .$$

$$f(x) = 2x^2$$
$$f(a) = 2a^2$$

$$= \lim_{h\to 0} \frac{2\times(3+h)^2 - 2\times 3^2}{h}$$

$$= \lim_{h \to 0}$$

1) M.q $\forall k \geq 2$, $\boxed{\frac{1}{k^2} \leq \frac{1}{k-1} - \frac{1}{k}}$.

$$U_n = \sum_{k=1}^{n} \frac{1}{k^2} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \dots + \frac{1}{n^2} \leq 2.$$

$$1$$

$$\frac{1}{2^2} \leq \frac{1}{1} - \frac{1}{2}$$

$$+ \quad \frac{1}{3^2} \leq \frac{1}{2} - \frac{1}{3}$$

$$\frac{1}{4^2} \leq \frac{1}{3} - \frac{1}{4}$$

$$\begin{array}{rl} & a \leq b \\ + & c \leq d. \\ \hline & a+c \leq b+d. \end{array}$$

$$\vdots$$

$$\frac{1}{n^2} \leq \frac{1}{n-1} - \frac{1}{n}.$$

$$\frac{1}{2^2} + \frac{1}{3^2} + \dots + \frac{1}{n^2} \leq \left(1 - \cancel{\frac{1}{2}}\right) + \left(\cancel{\frac{1}{2}} - \cancel{\frac{1}{3}}\right) + \left(\cancel{\frac{1}{3}} - \cancel{\frac{1}{4}}\right) + \dots + \left(\cancel{\frac{1}{n-2}} - \cancel{\frac{1}{n-1}}\right) + \left(\cancel{\frac{1}{n-1}} - \frac{1}{n}\right)$$

$$\frac{1}{2^2} + \frac{1}{3^2} + \dots + \frac{1}{n^2} \leq 1 - \frac{1}{n}.$$

$+1$

$$\sum_{k=1}^{n} \frac{1}{k^2} \leq 2 - \frac{1}{n} \leq 2.$$

$$u_{n+1} - u_n = \sum_{k=1}^{n+1} \frac{1}{k^2} - \sum_{k=1}^{n} \frac{1}{k^2}$$

$$= \cancel{\sum_{k=1}^{n} \frac{1}{k^2}} + \frac{1}{(n+1)^2} - \cancel{\sum_{k=1}^{n} \frac{1}{k^2}}.$$

$$= \frac{1}{(n+1)^2} \geq 0.$$