

$$y = 3x^2 - 2x + 4$$

$$\begin{aligned}y' &= \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} = \\&= \lim_{h \rightarrow 0} \frac{3(x+h)^2 - 2(x+h) + 4 - 3x^2 + 2x - 4}{h} \\&= \lim_{h \rightarrow 0} \frac{3(x^2 + h^2 + 2xh) - 2x - 2h + 4 - 3x^2 + 2x - 4}{h} \\&= \lim_{h \rightarrow 0} \frac{3x^2 + 3h^2 + 6xh - 2x - 2h + 4 - 3x^2 + 2x - 4}{h} \\&= \lim_{h \rightarrow 0} \frac{3h^2 + 6xh - 2h}{h} \\&= \lim_{h \rightarrow 0} \frac{h(3h + 6x - 2)}{h} \\&= \lim_{h \rightarrow 0} (3h + 6x - 2) \\&= 6x - 2\end{aligned}$$

$$y = -2x^3 + 6x^2 - 8$$

$$D = \mathbb{R} \quad D =]-\infty; +\infty[\quad \rightarrow x_1, 2 = 2$$

$$\begin{array}{r|rrr|r} & -2 & +6 & 0 & -8 \\ -1 & & +2 & -8 & +8 \\ \hline & -2 & +8 & -8 & 0 \end{array}$$

$$y = (x+1)(-2x^2 + 8x - 8)$$

$$y = -2(x+1)(x^2 - 4x + 4)$$

$$y = -2(x+1)(x-2)^2$$

$$\begin{array}{c} \downarrow \\ \begin{array}{ccccc} & -1 & & 2 & \\ x+1 & - & + & | & + \\ -2x^2 + 8x - 8 & - & - & | & - \\ \hline & + & - & | & - \end{array} \end{array}$$

INT. ASSE X

$$(-1, 0) \ (2, 0)$$

$$\begin{array}{c} \downarrow \\ \begin{array}{ccccc} & -1 & & 2 & \\ -2 & - & + & | & - \\ x+1 & - & + & | & + \\ (x-2)^2 & + & + & | & + \\ \hline & + & - & | & - \end{array} \end{array}$$

INT. ASSE y (0, -8)

$$y' = -6x^2 + 12x$$

$$y' = -6x(x-2)$$

$$\begin{array}{c} \begin{array}{ccccc} & 0 & & +2 & \\ -6x & + & - & | & - \\ (x-2) & - & - & | & - \\ \hline & & & | & - \end{array} \end{array}$$

$$m(0, -3)$$

$$M(2, 0)$$

$$y'' = -12x + 12$$

$$y'' = 12(-x+1)$$

$$\begin{array}{c} \begin{array}{ccccc} & 1 & & & \\ 12 & + & | & + & \\ -x+1 & + & | & - & \\ \hline & & & | & - \end{array} \end{array}$$

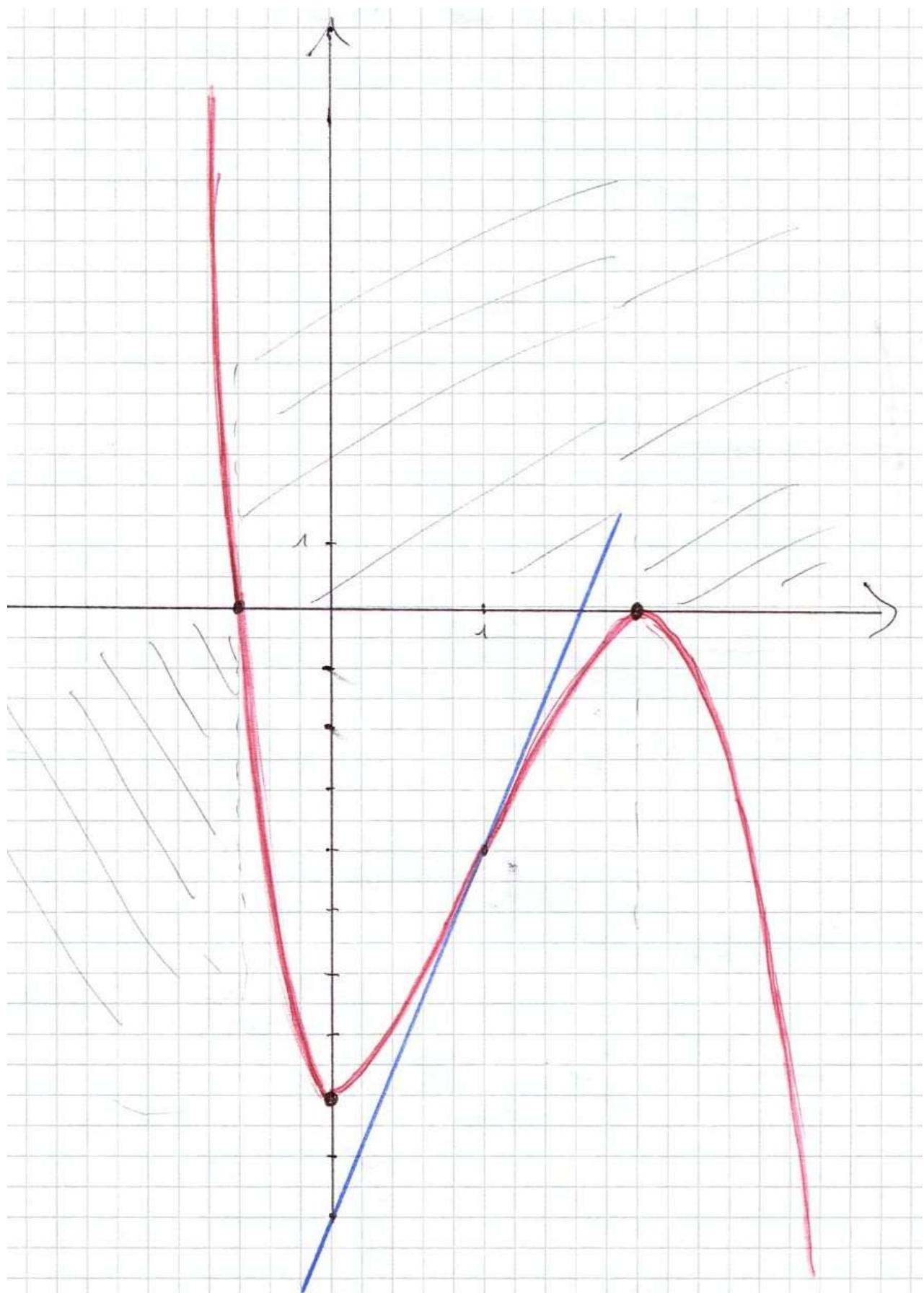
$$F'(1) = -4 \quad (1; -4)$$

TANG. INFUESS.

$$F'(1) = 6 \quad -4 = 6(1) + q \quad \rightarrow 10 = q$$

$$y = 6x + 9$$

$$y = 6x - 10$$



$$y = \frac{5x^2 - 3x + 2}{2x^2 - 5}$$

$$y' = \frac{[(10x - 3) \cdot (2x^2 - 5)] - [(4x) \cdot (5x^2 - 3x + 2)]}{(2x^2 - 5)^2}$$

$$= \frac{(20x^3 - 50x - 6x^2 + 15) - (20x^3 - 12x^2 + 8x)}{(2x^2 - 5)^2}$$

$$= \frac{\cancel{20x^3} - 50x - 6x^2 + 15 - \cancel{20x^3} + 12x^2 - 8x}{(2x^2 - 5)^2}$$

$$= \frac{6x^2 - 58x + 15}{(2x^2 - 5)^2}$$