$y = 3x^2 - 4x + 5$ $\quad D = \{\forall x \in \mathbb{R}\}$

$\Delta = 16 - 4 \cdot 3 \cdot 5 = -44$ $\quad D =]-\infty; +\infty[$

$3x^2 - 4x + 5 > 0 \quad \forall x \in \mathbb{R}$

$3x^2 - 4x + 5$ +

INTERSEZIONE ASSE X $\begin{cases} y = 0 \\ y = 3x^2 - 4x + 5 \end{cases}$ NON CI SONO INTERSEZIONI

INTERSEZIONE ASSE Y $\begin{cases} x = 0 \\ y = 3x^2 - 4x + 5 \end{cases}$ $(0;5)$

$$y' = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h} = \lim_{h \to 0} \frac{3(x+h)^2 - 4(x+h) + 5 - (3x^2 - 4x + 5)}{h}$$

($f(x+h)$, $f(x)$)

$$y' = \lim_{h \to 0} \frac{3(x^2 + h^2 + 2xh) - 4x - 4h + 5 - 3x^2 + 4x - 5}{h} = \lim_{h \to 0} \frac{3x^2 + 3h^2 + 6xh - 4h - 3x^2}{h}$$

$$y' = \lim_{h \to 0} \frac{h(3h + 6x - 4)}{h} = \lim_{h \to 0} (3h + 6x - 4) = 6x - 4$$

$6x - 4 \Rightarrow 6x = 4 \Rightarrow x = \frac{4}{6} \Rightarrow x = \frac{2}{3}$

		$\frac{2}{3}$	
$6x-4$	$-$	0	$+$
y'	$\searrow$		$\nearrow$

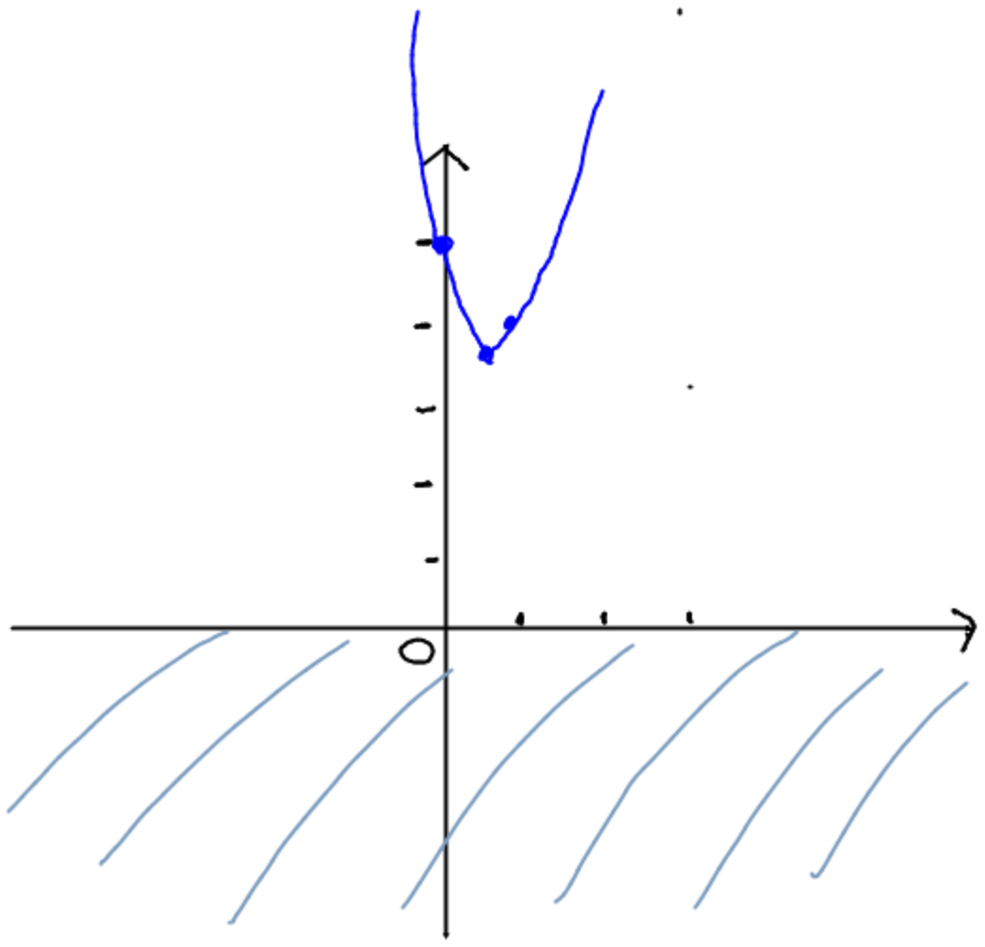
$y_{minimo} = f\left(\frac{2}{3}\right) =$

$y = 3\left(\frac{2}{3}\right)^2 - 4\left(\frac{2}{3}\right) + 5$

$y = 3 \cdot \frac{4}{9} - \frac{8}{3} + 5$

$y = \frac{4}{3} - \frac{8}{3} + 5 \Rightarrow y = \frac{4 - 8 + 15}{3} = \frac{11}{3}$

$\min\left(\frac{2}{3}; \frac{11}{3}\right)$



$f(1) = 3 - 4 + 5 = 4$

Calcolo della derivata con metodo rapido

$$y = kx^n \Rightarrow y' = knx^{n-1}$$

$$y = 3x^2 - 4x + 5 \Rightarrow y' = 6x - 4$$

$$y = 7x^5 - 3x^4 + 2x^3 - 5x^2 + 4x + 2 \quad y' = 35x^4 - 12x^3 + 6x^2 - 10x + 4$$