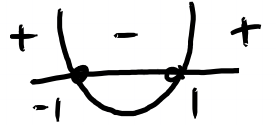


$$4) f(x) = \frac{1}{3}x^3 - x \quad I = \mathbb{R}$$

$$f'(x) = \frac{1}{3} \times 3x^2 - 1 = x^2 - 1$$


Signe de  $f'$  :  $a=1>0$   $\cup$   $b=0$   $c=-1$

$$\Delta = 0^2 - 4 \times 1 \times (-1) = 4 > 0$$



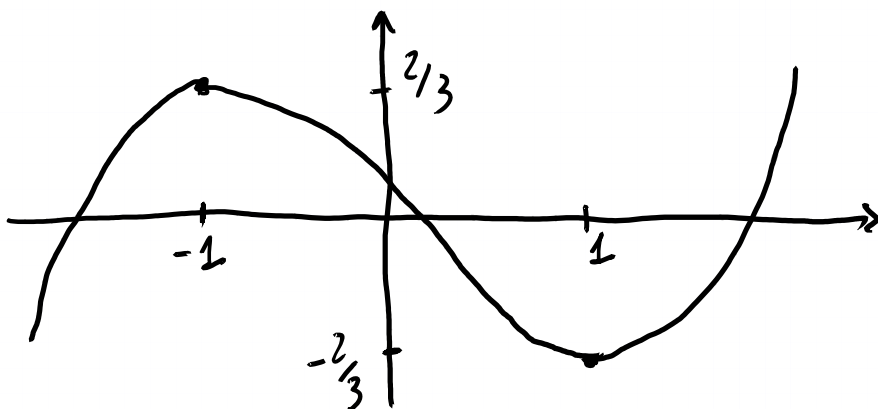
$$x_1 = \frac{-2}{2} = -1 \quad x_2 = \frac{2}{2} = 1$$

Tableau de variations :

$x$	$-\infty$	$-1$	$1$	$+\infty$	
$f'$	$+$	$\emptyset$	$-$	$\emptyset$	$+$
$f$					

$$f(-1) = \frac{1}{3}(-1)^3 - (-1) = -\frac{1}{3} + 1 = \frac{2}{3}$$

$$f(1) = \frac{1}{3} - 1 = -\frac{2}{3}$$



$\frac{2}{3}$  est un max en  $x = -1$

$-\frac{2}{3}$  est un min en  $x = 1$