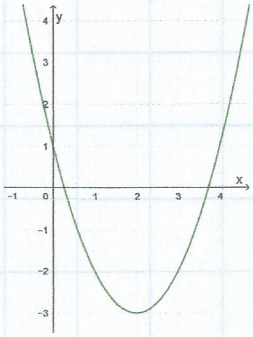
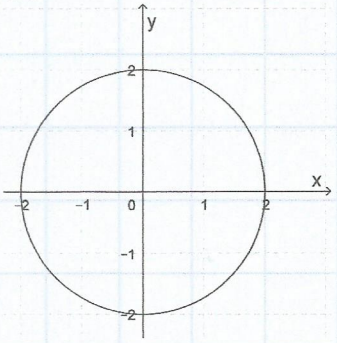
Rappels de 3ème - Fonctions : Solutions

1. Tous les graphiques suivants représentent des relations. Parmi ceux-ci, quels sont ceux qui représentent une fonction ?

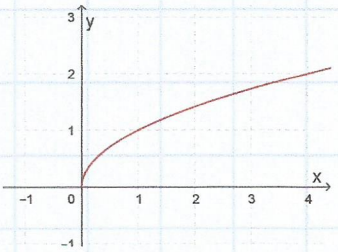
(a)



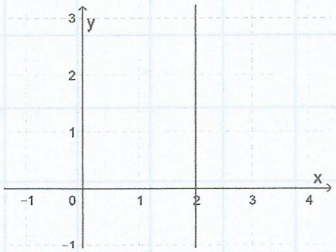
(b)



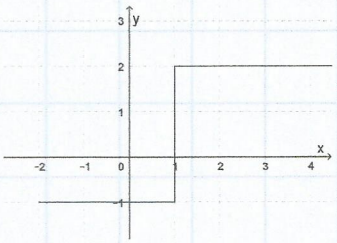
(c)



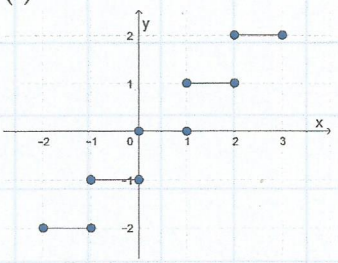
(d)



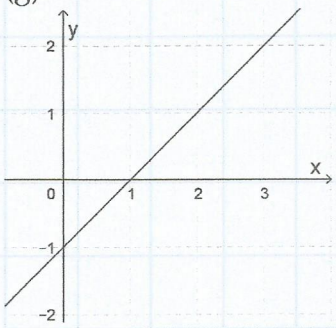
(e)



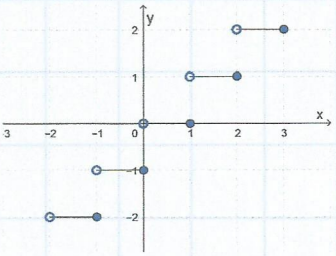
(f)



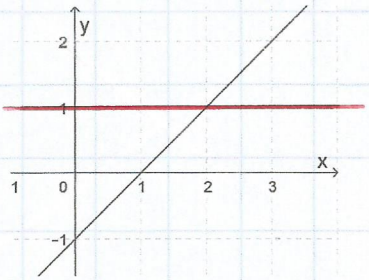
(g)



(h)



(i)



a) oui

b) non

c) oui

d) non

e) non

f) non

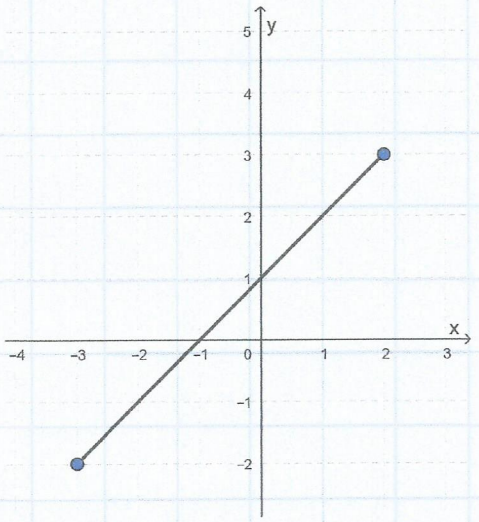
g) oui

h) oui

i) oui

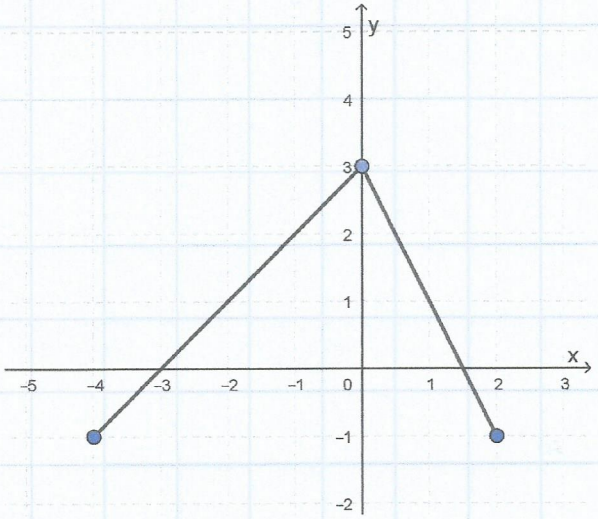
2. Pour chacune des fonctions représentées ci-dessous, déterminer le domaine, l'ensemble image, le(s) zéro(s), l'ordonnée à l'origine et compléter les égalités.

(a)



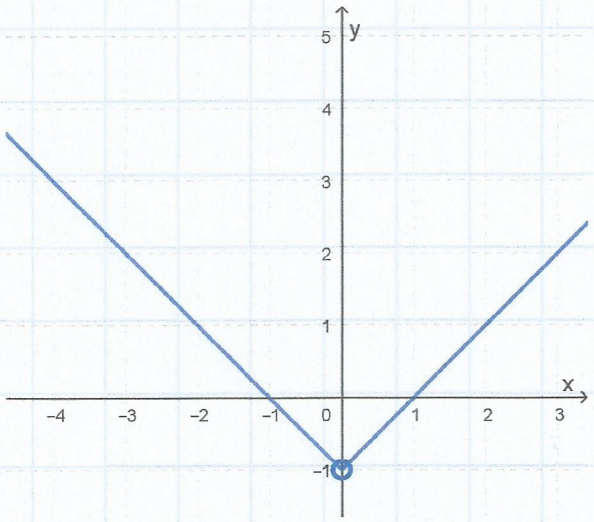
- dom_f : $[-3, 2]$
- im_f : $[-2, 3)$
- Zéro(s) : $x = -1$
- Ord. à l'origine : $y = 1$
- $f(1) = 2$
- $f(-2) = -1$
- $f(\ldots 1 \ldots) = 2$
- $f(\ldots -2 \ldots) = -1$

(b)



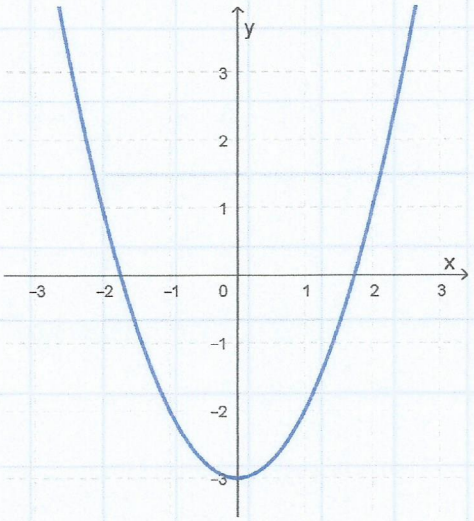
- dom_f : $[-4, 2]$
- im_f : $[-1, 3]$
- Zéro(s) : $x = -3$; $x = \frac{3}{2}$
- Ord. à l'origine : $x = 3$
- $f(-1) =$ 1
- $f(2) =$ -1
- $f(.....) = 1$ 1 et -2
- $f(.....) = 2$ -1 et $\frac{1}{2}$

(c)



- dom_f : $\mathbb{R}$
- im_f : $]-1, +\infty[$
- Zéro(s) : $x = -1$ et $x = 1$
- Ord. à l'origine : —
- $f(2) = 1$
- $f(-2) = -1$
- $f(.....) = 2$ $x = -3$ et $x = 3$
- $f(.....) = 0$ $x = -1$ et $x = 1$

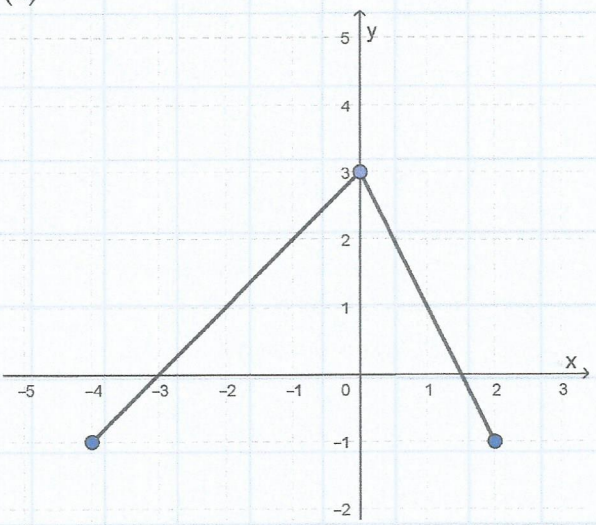
(d)



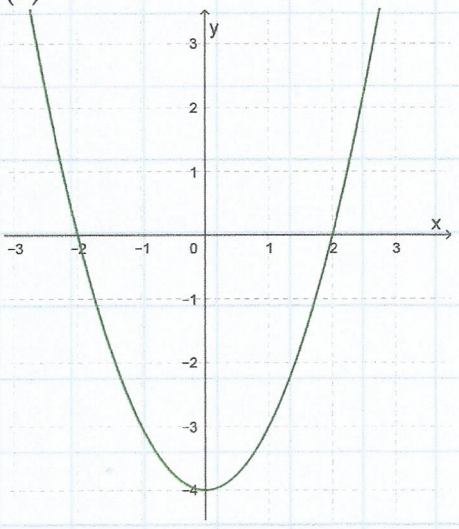
- dom_f : $\mathbb{R}$
- im_f : $[-3, +\infty[$
- Zéro(s) : $x \approx \pm 1{,}7$
- Ord. à l'origine : -3
- $f(2) = 1$
- $f(-2) = 1$
- $f(.....) = -2$ $\quad x = -1$ et $x = 1$
- $f(.....) = 2$ $\quad x \approx -2{,}3$ et $x \approx 2{,}3$

3. Etudier le signe des fonctions suivantes :

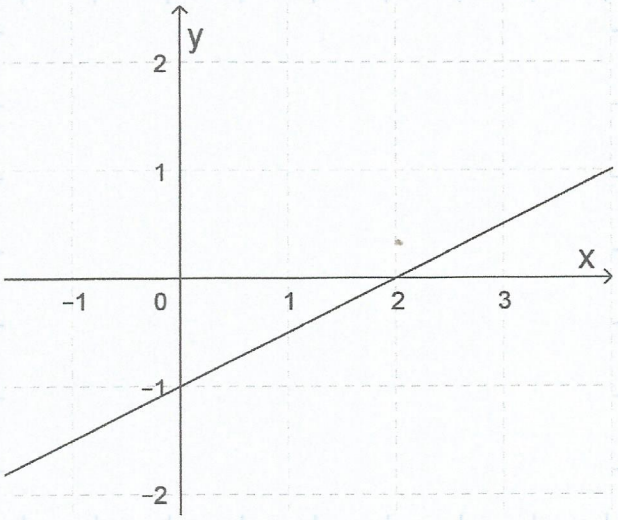
(a)



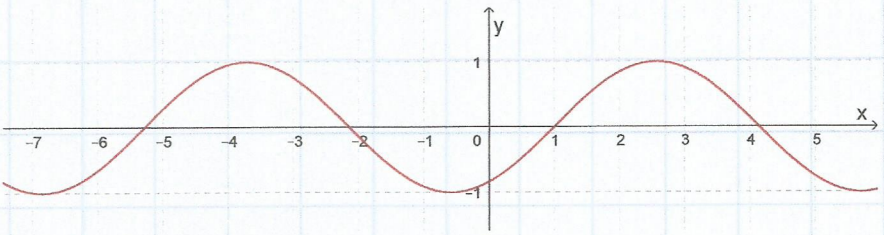
(b)



(c)



(d)



a)

x	$\nexists$	-4		-3		$\frac{3}{2}$		2	$\nexists$
$f(x)$	$\nexists$	$-$	0	$+$	0	$-$			$\nexists$

b)

x	-2		2	
$f(x)$	$+$	0	$-$	0	$+$

c)

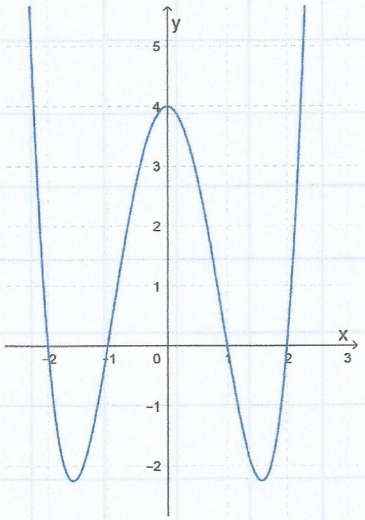
x		2	
$f(x)$	$-$	0	$+$

d)

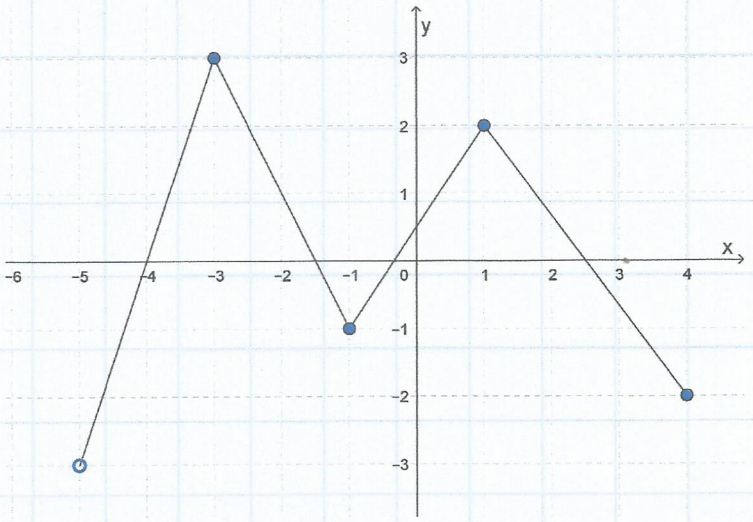
x	$-5,3$		$-2,1$		1		$4,1$	
$f(x)$	$-$	0	$+$	0	$-$	0	$+$	0	$-$

4. Etudier la variation et les extrémums des fonctions suivantes.

(a)



(b)



a)

x		$-1,5$		0		$1,5$	
$f(x)$	↓	-2	↑	4	↓	2	↑
		m		M		m	

b)

x		-5		-3		-1		1		4	
$f(x)$	↓	-3	↑	3	↓	-1	↑	2	↓	-2	↑
				M		m		M			