

Exercices sur les graphes de fonctions associées

Etant donné une fonction de référence f , on peut transformer son graphe \mathcal{C}_f par des opérations géométriques élémentaires (translations, symétries, affinités, ...). On obtient alors le graphe d'une nouvelle fonction g .

(1) Dans cette première série d'exercices, on donne l'expression de $g(x)$. On demande de préciser la fonction de référence f et de construire le graphe de g à partir de celui de f .

a) $g : x \mapsto (x - 3)^2 + 7$

h) $g : x \mapsto ||x - 1| - 2|$

b) $g : x \mapsto \frac{1}{8}(x + 1)^3$

k) $g : x \mapsto -|2 - |x + 1||$

c) $g : x \mapsto \frac{1}{2}|x + 2| - 1$

l) $g : x \mapsto -\sin\left(2x - \frac{\pi}{3}\right) + 4$

d) $g : x \mapsto |x^2 - 4|$

m) $g : x \mapsto -2\sqrt{x + \frac{3}{4}} - 1$

e) $g : x \mapsto -\sqrt{x + 4} + 1$

n) $g : x \mapsto \frac{3}{2x - 1} - 1$

f) $g : x \mapsto 1 - 2\sin\left(x + \frac{\pi}{4}\right)$

o) $g : x \mapsto 2\cos\left(\frac{x}{2}\right)$

g) $g : x \mapsto \cos(3x) + 2$

p) $g : x \mapsto \tan\left(\frac{x}{4}\right)$

h) $g : x \mapsto \frac{2}{x - 3} + 1$

q) $g : x \mapsto -2\sin(\pi x)$

i) $g : x \mapsto \frac{1}{3 - x} + 4$

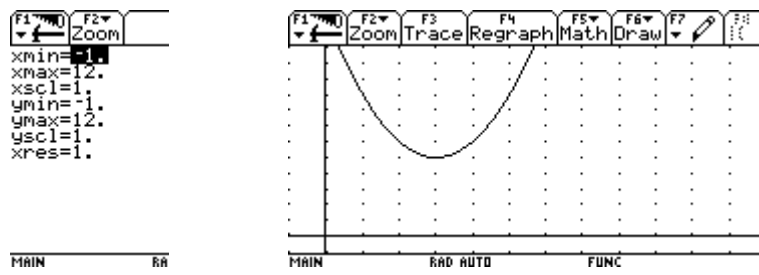
r) $g : x \mapsto 1 - \frac{3}{4x - 8}$

j) $g : x \mapsto \frac{1}{|x|}$

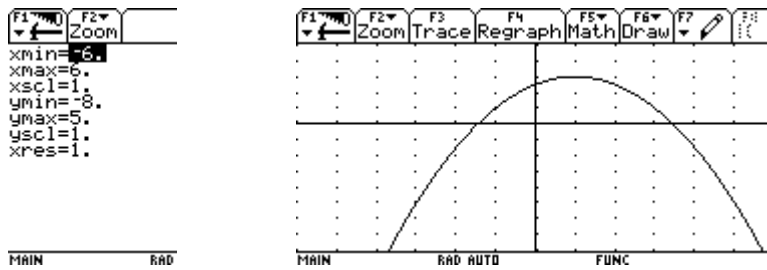
Indication : il est fortement conseillé de contrôler vos solutions à l'aide de la calculatrice TI V200.

(2) Sur chacune des figures suivantes on donne le graphe de la fonction g . On demande de préciser la fonction de référence f et l'équation cartésienne $y = g(x)$ du graphe. **Conseil** : bien regarder les paramètres de fenêtre ! Parfois on vous donne aussi les coordonnées d'un point de la courbe via la position du curseur ($x_c = \dots$, $y_c = \dots$)

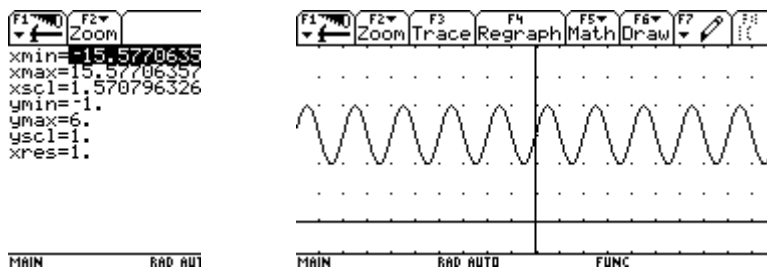
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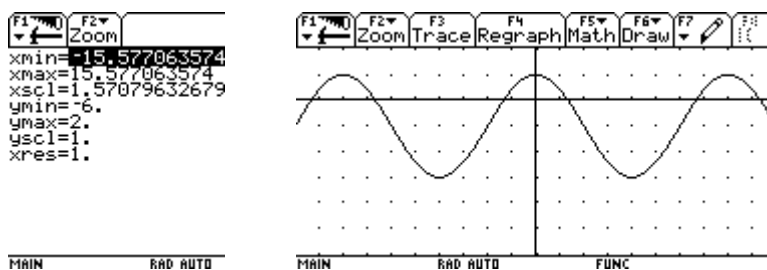
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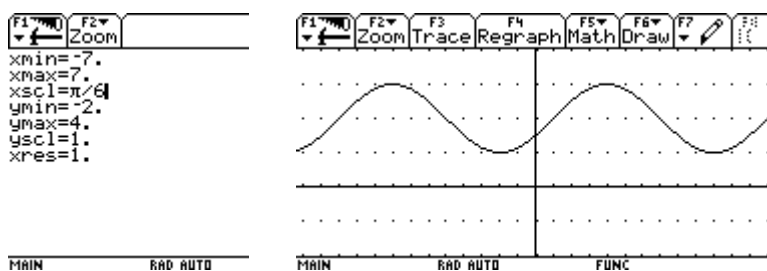
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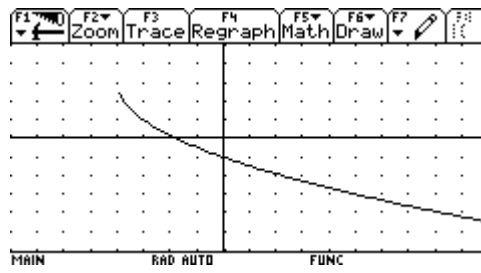
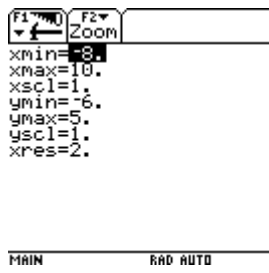
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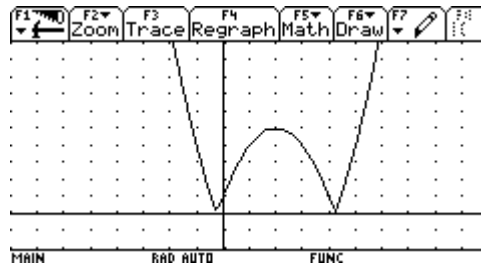
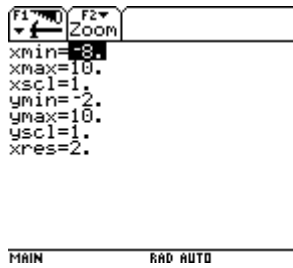
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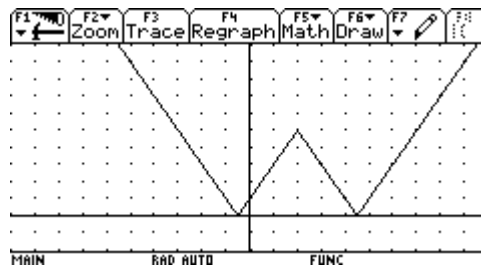
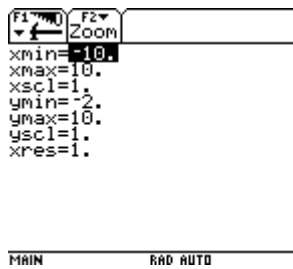
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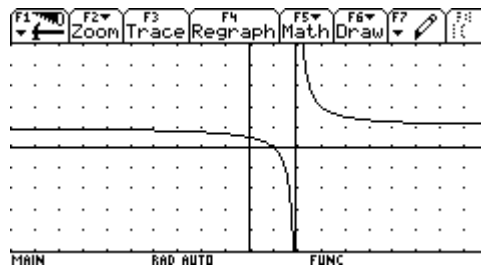
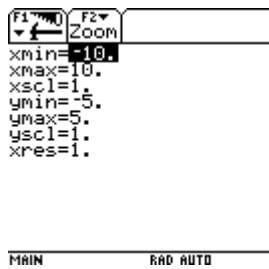
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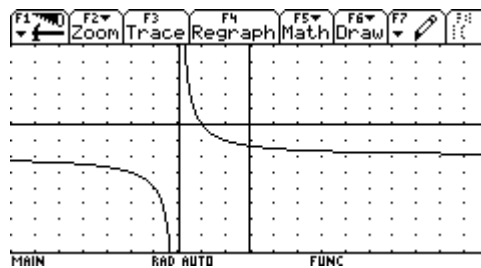
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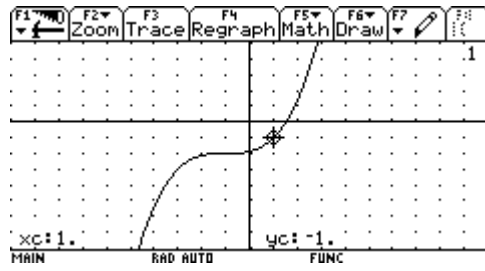
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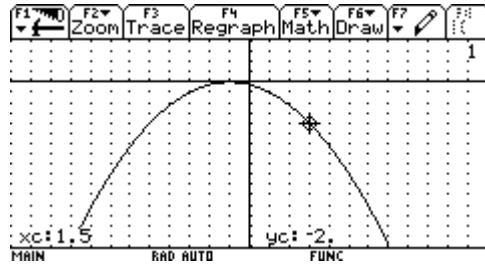
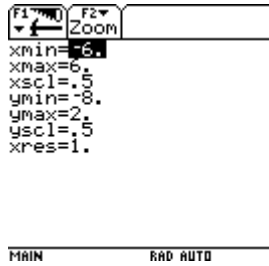
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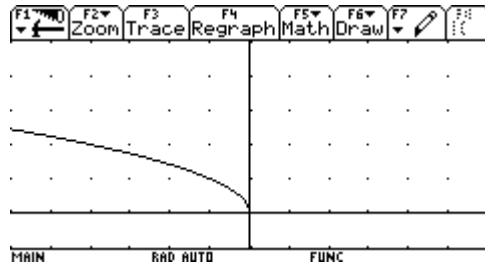
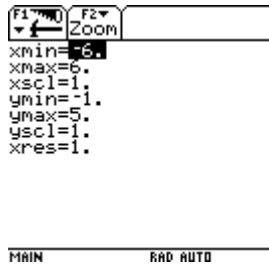
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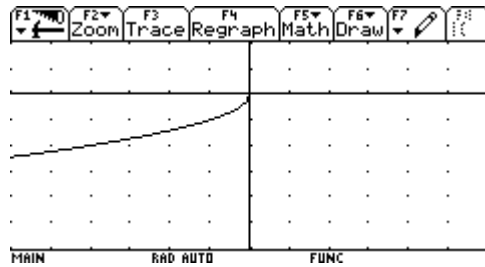
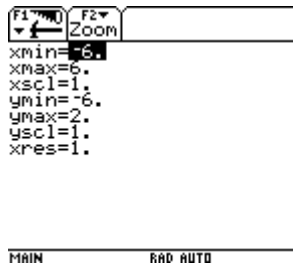
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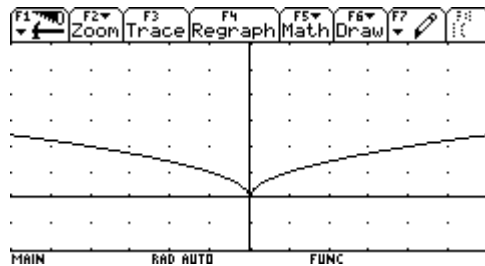
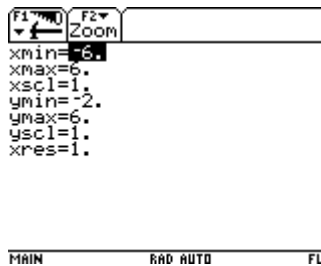
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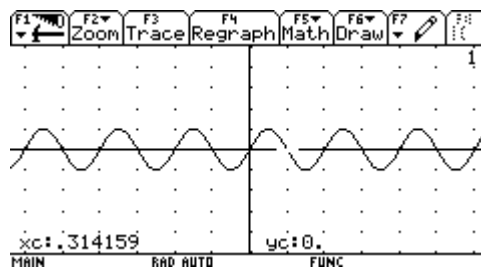
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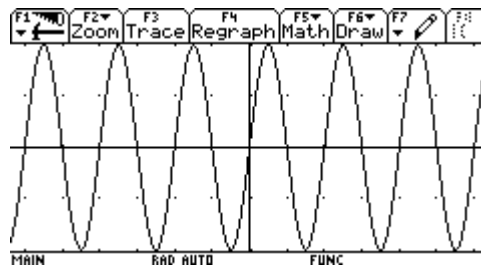
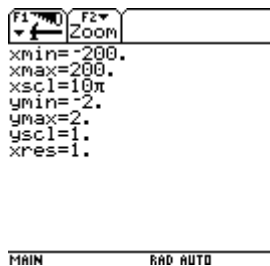
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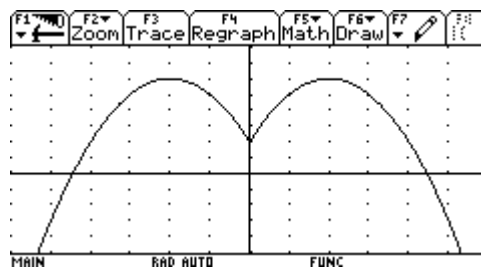
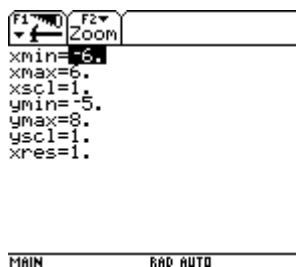
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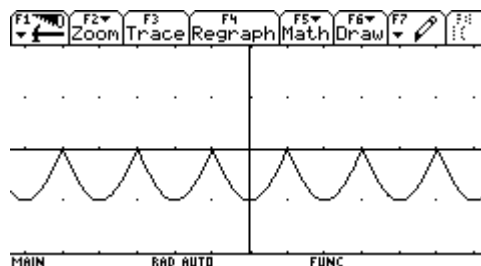
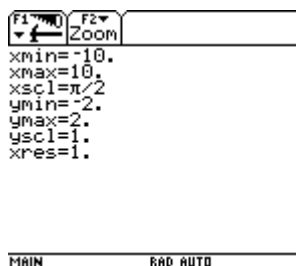
q)



r)



s)



Réponses pour le (2) :

a) $y = (x - 3)^2 + 5$

b) $y = -\frac{1}{2}(x - 1)^2 + 3$

c) $y = \sin(2x) + 3$

d) $y = 2 \cos\left(\frac{x}{2}\right) - 1$

e) $y = \sin\left(x - \frac{\pi}{6}\right) + 2$

f) $y = -2\sqrt{x + 4} + 3$

g) $y = |(x - 2)^2 - 5|$

h) $y = ||x - 2| - 5|$

i) $y = \frac{1}{x-2} + 1$

j) $y = \frac{2}{x+3} - 2$

k) $y = \frac{1}{8}(x + 1)^3 - 2$

l) $y = -\frac{1}{2}\left(x + \frac{1}{2}\right)^2$

m) $y = \sqrt{-x}$

n) $y = -\sqrt{-x}$

o) $y = \sqrt{|x|}$

p) $y = 0,1 \sin(10x)$

q) $y = 2 \sin(0,1x)$

r) $y = (|x| - 2)^2 + 6$

s) $y = -|\cos x|$