Correction des exercices de révisions

Exercices d'exécution

6ème

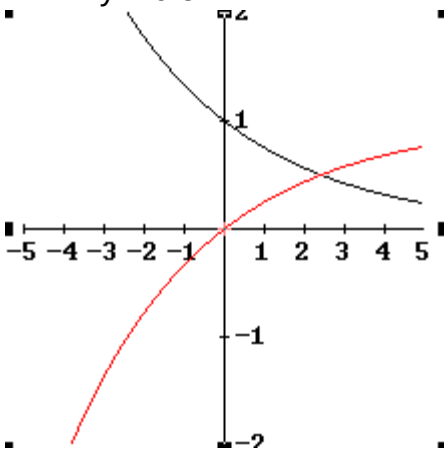
1) $g(x) = \pm\sqrt[4]{\frac{y+1}{-2}} - 3$

2) $\frac{1}{2^{4,5}} = \frac{1}{16\sqrt{2}} = \frac{\sqrt{2}}{32}$

3) x = 5/2 ; $3^x = 9$ ou $3^x = 1$
x = 2 x = 0

4) D = R ; I =]0, +∞[; décroissante ; concavité vers le haut ; lim = 0^+
± ∞ + ∞

AH ≡ y = 0 en + ∞



g(x) : AH ≡ y = 1 en + ∞

5) Recette prévue en 2006 : $30000000.0.88^4$ = 17990860.8 FB = 445981 €
6) 228 repas

7) Elle vaudra 10.000 € dans 31 ans
$50.000\ 0{,}95^x = 10.000\ 1{,}012^x$ d'où x = 25 ans

8) a = 10 ; a = 2/3 ; a = 2

9) x = -3 , x = 2/5

10) x = -5/3 x = -1 ou x = 6 x = 1 ou x = 8

x < $(\log_2 200 + 1) / 7$ x > -19/16

11) D =]- ∞,-2[U]-1,0[U]2,+ ∞[

12)(512 ;0,5)

13)D = $[-\sqrt{26},-2\sqrt{6}]U[2\sqrt{6},\sqrt{26}]$ rem : fct paire

$$f'(x) = (\frac{6x^3}{\sqrt{-x^4+50x^2-624}} - 6x\arcsin(x^2-25)).\frac{1}{9x^4}$$

$$= (\frac{x^2}{\sqrt{-x^4+50x^2-624}} - \arcsin(x^2-25)).\frac{2}{3x^3}$$

$-\sqrt{26}$		-5		$-2\sqrt{6}$
π /156	+	0	-	$-\pi$ /144

D = [0,1/2]

$$f'(x) = \frac{1}{\sqrt{arcins2x}}\frac{1}{\sqrt{1-4x^2}}$$

f(x) ≥ 0

D = R

$$f'(x) = \frac{10}{1+25x^2}$$

	0	
-	0	+

D = [1/3,1]

$$f'(x) = \arccos(-3x+2) + \frac{3x}{\sqrt{-3-9x^2+12x}}$$

1/3		1
0	+	π

D = [0,+ ∞[

$$f'(x) = \frac{1}{2(1+x)\sqrt{x}}$$

f(x) ≥ 0

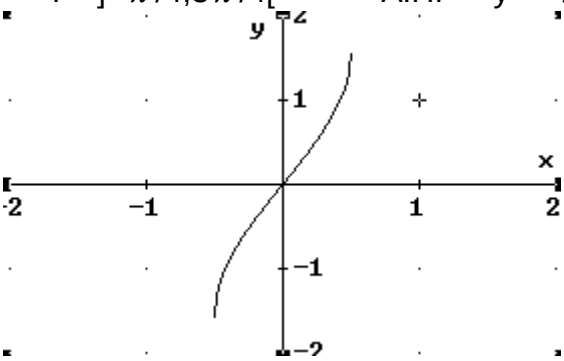
14) $f(x) = f_1(x)$ D = [-3,-1] I = [-π/2,π/2] x = -2
$g(x) = f_3(x)$ D = R I =]-π/2+3,π/2+3[x = /
$h(x) = f_2(x)$ D = [-1/2,1/2] I = [-π/2,π/2] x = 0

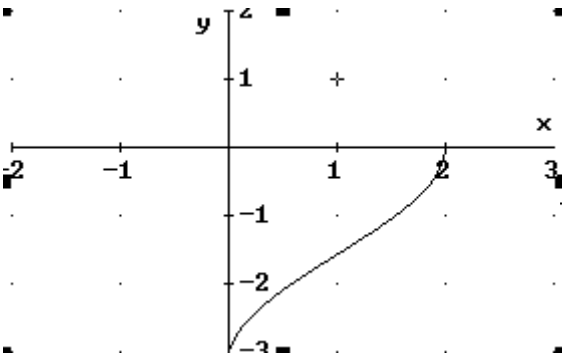
$f(x) = \log_2 x$ $g(x) = 3^x$ $h(x) = 2\,e^x$

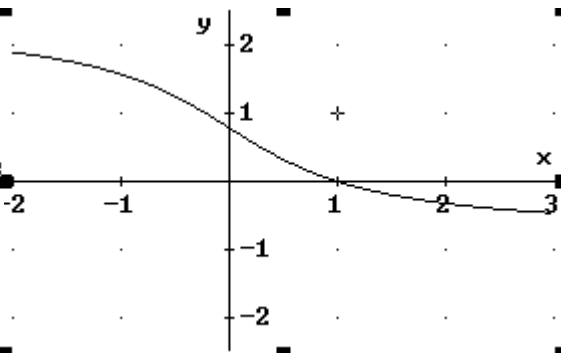
15) $x \in [1/5,3/5]$
attention : l'image de arcos est $[0, \pi]$ d'où équation mal posée S = {}
$x \in [-1,1]$
x = sin (arctg 0.75) = 0,6
$x \in R$

$$x = \frac{\frac{8}{3}+\frac{5}{3}}{1-\frac{8}{3}\frac{5}{3}} = -\frac{39}{31}$$

16) I = $[-\pi/2, \pi/2]$
I = $[-\pi,0]$
I = $]-\pi/4,3\pi/4[$ A.H. ≡ y = $-\pi/4$ et A.H. ≡ y = $3\pi/4$







17) z + z' = 6 – 2i ; -z = - 4 – 3i ; conjugué de z = 4 – 3i ; module de z' = $\sqrt{29}$

z.z' = 23 – 14i ; $\frac{1}{z} = \frac{4-3i}{25}; \frac{z'}{z} = \frac{(2-5i)(4-3i)}{25} = \frac{-7-26i}{25}$

18) 1 ; i ; -1

19) $\frac{3}{7}$; $\left(\frac{-4i}{4}\right)^{10} = -1$; 16 ; 1 car module z = module du conjugué de z

20) a) z = $\pm\frac{3}{8}i$

b) $\Delta = 9 - 96 = -87 = 87i^2$

$x = \frac{-3 \pm \sqrt{87}i}{4}$

c) $z^2 = \frac{3i+4}{2}$ d'où après calculs, $z = \pm\frac{1}{2}(3+i)$

d) $\Delta = 3 - 4i$

$racine\ \Delta = \pm(2-i)$

d'où après calculs, $z = 1-2i$; $z = -1-i$

21) z=2 cis π/5 ; z_1 = -z = 2 cis 6π/5 ; z_2 = conj z = 2 cis 9π/5

$z' = \frac{-3}{2}(\sqrt{3}+i) = (-2.6-1.5i) = 3cis\frac{7\pi}{6}$

$z = 2cis\frac{\pi}{5} \cong 2(0.81+0.59i)$

z_3 = z + z' = -0.98 – 0.32i ; z_4 = z – z' = 4.22 + 2.68 i

z_5 = 2z = 4 cis π/5 ; z_6 = z.z' = 6 cis 41π/30 ; z^3 = 8 cis 3π/5

22)

$z^4 = \sqrt{3} - i = 2cis\frac{11\pi}{6}$

$z_0 = \sqrt[4]{2}cis\frac{11\pi}{24}$

$z_1 = \sqrt[4]{2}cis\frac{23\pi}{24}$

$z_2 = \sqrt[4]{2}cis\frac{35\pi}{24}$

$z_3 = \sqrt[4]{2}cis\frac{47\pi}{24}$

23)

$$z^6 = 16cis\frac{11\pi}{6}$$

$$z_k^* = cis\frac{k\pi}{3}$$

$$z_0 = \sqrt[3]{4}cis\frac{11\pi}{36}$$

$$z_1 = \sqrt[3]{4}cis\frac{11\pi}{36}cis\frac{\pi}{3}$$

$$z_2 = \sqrt[3]{4}cis\frac{11\pi}{36}cis\frac{2\pi}{3}$$

$$z_3 = \sqrt[3]{4}cis\frac{11\pi}{36}cis\pi$$

$$z_4 = \sqrt[3]{4}cis\frac{11\pi}{36}cis\frac{4\pi}{3}$$

$$z_5 = \sqrt[3]{4}cis\frac{11\pi}{36}cis\frac{5\pi}{3}$$

25) $C_{20}^{9}(2x^3)^{11}\left(\frac{-3}{x^2}\right)^9$