Problemes Supplementaire Fts EXP-LOG

No1 $\left(\frac{1}{32}\right)^{-2x+7} \cdot 8^{4x-5} = \frac{64^{x+2}}{16^{3x-1}}$

$$\left(2^5\right)^{-2x+7} \cdot \left(2^3\right)^{4x-5} = \frac{\left(2^6\right)^{x+2}}{\left(2^4\right)^{3x-1}}$$

$$2^{-10x+35} \cdot 2^{12x-15} = \frac{2^{6x+12}}{2^{12x-4}}$$

$$2^{2x+20} = 2^{-6x+16}$$

$$2x+20 = -6x+16$$

$$8x = -4$$

$$\boxed{x = -0.5}$$

No2 $\log_3(x-1) = 2 + \log_3(2x-5)$

$x-1>0$ | $2x-5>0$

$x>1$ | $x>2.5$

$$\log_3(x-1) - \log_3(2x-5) = 2$$

$$\log_3\left(\frac{x-1}{2x-5}\right) = 2 \Rightarrow 3^2 = \frac{x-1}{2x-5}$$

$$9 \cdot (2x-5) = \frac{x-1}{2x-5} \cdot (2x-5)$$

$$18x-45 = x-1$$

$$17x = 44$$

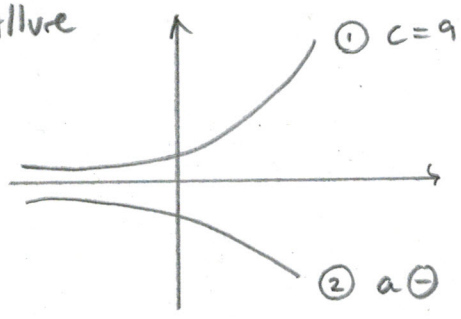
$$\boxed{x = \frac{44}{17}}$$

No 3 a) $f(x) = -5\left(\frac{1}{3}\right)^{-2x+500} + 4$

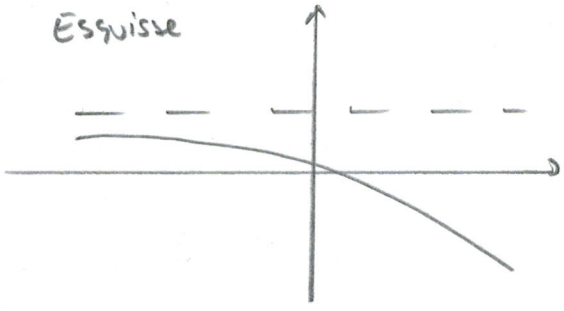
$f(x) = -5\left(\frac{1}{3}\right)^{-2(x-250)} + 4$

$f(x) = -5 \cdot 9^{x-250} + 4$

Allure

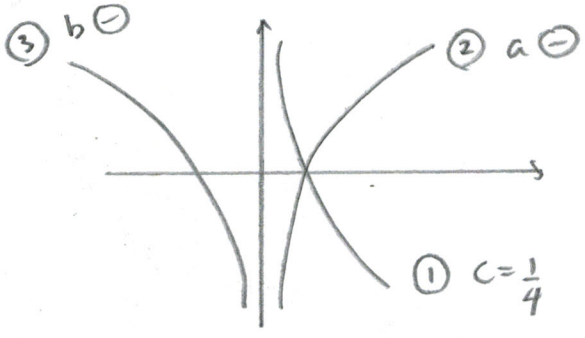


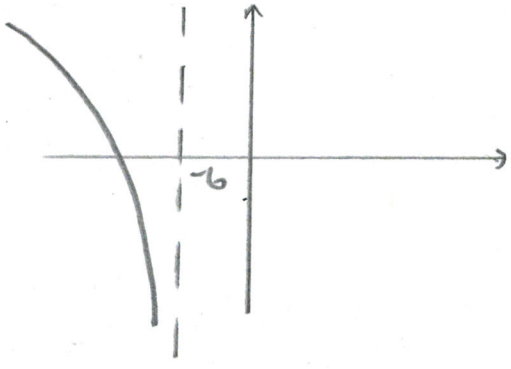
Esquisse



b) $g(x) = -7 \log_{\frac{1}{4}}(-5x-30) + 69$

$g(x) = -7 \log_{\frac{1}{4}}(-5(x+6)) + 69$





No4 a) $0 = -5\left|-6x+12\right|+150$

$0 = -5\left|-6(x-2)\right|+150$

$0 = -30\left|x-2\right|+150$

$-150 = -30\left|x-2\right|$

$5 = \left|x-2\right|$

⊕ ⊖

$x \geq 2$ $\quad x < 2$

$x-2=5$ $\quad x-2=-5$

$x=8$ $\quad x=-3$

b) $0 = 4\left|10-2x\right|+24$

$0 = 4\left|-2x+10\right|+24$

$0 = 4\left|-2(x-5)\right|+24$

$0 = 8\left|x-5\right|-24$

$3 = \left|x-5\right|$

⊕ ⊖

$x \geq 5$ $\quad x < 5$

$x-5=3$ $\quad x-5=-3$

$x=8$ $\quad x=2$

No5 a) $0 = -10 \cdot e^{3x-8}+40$

$4 = e^{3x-8}$

$3x-8 = \log_e 4 = \ln 4$

$\downarrow$

$x = 3{,}13$

b) $0 = 5\ln(2x-9)-35$

$7 = \ln(2x-9)$ ou $7 = \log_e(2x-9)$

$\downarrow$ Exp

$e^7 = 2x-9$

$1096{,}63 = 2x-9$

$\downarrow$

$x = 552{,}82$

No6 a) $V_f = 200\,000\,(1{,}015)^{20}$ ↳ 20 "3mois" dans 5ans $= 269\,371\,\$$

$\downarrow$

$6\% \rightarrow 12$ mois

$x \rightarrow 3$ mois $\quad x = 1{,}52$

b) $1\,000\,000 = 200\,000\,(1{,}015)^x$ $\quad x$: nb de 3mois

$5 = 1{,}015^x$

$x = \log_{1{,}015} 5 = 108{,}1$ "3mois"

↳ $\div 4 = 27{,}02$ ans.

No7 $4 = 8 \cdot 0{,}97^x$

$\frac{1}{2} = 0{,}97^x \Rightarrow x = \log_{0{,}97} 0.5 = 22{,}76$ ans

No8 $V_f = 200 \cdot \left(\frac{9}{10}\right)^2 = 162$ lbs (Si perd $\frac{1}{10}$, il en conserve les $\frac{9}{10}$ aux 6 mois)